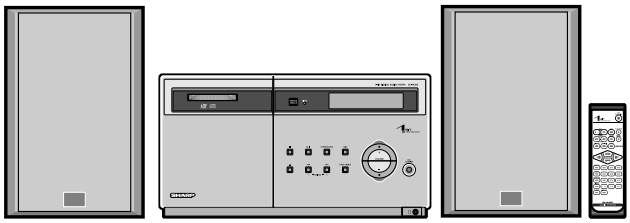
SHARP SERVICE MANUAL

No. S5348SDEX200/



1-BIT DIGITAL AUDIO SYSTEM

MODEL SD-EX200

SD-EX200 1-Bit Digital Audio System consisting of SD-EX200 (main unit) and CP-EX200 (speaker system).

1bit Technology

COMPACT disc DIGITAL AUDIO

- In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

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SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

IMPORTANT SERVICE NOTES (FOR U.S.A. ONLY)

BEFORE RETURNING THE AUDIO PRODUCT

(Fire & Shock Hazard)

Before returning the audio product to the user, perform the following safety checks.

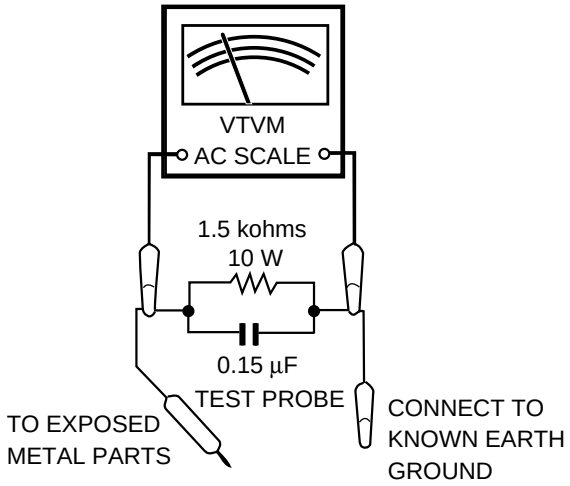
1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the audio product.
2. Inspect all protective devices such as insulating materials, cabinet, terminal board, adjustment and compartment covers or shields, mechanical insulators etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

* Plug the AC line cord directly into a 120 volt AC outlet.

* Using two clip leads, connect a 1.5 kohm, 10 watt resistor paralleled by a 0.15 μF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as conduit or electrical ground connected to earth ground.

* Use a VTVM or VOM with 1000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor (See diagram).

* Connect the resistor connection to all exposed metal parts having a return path to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.



All check must be repeated with the AC line cord plug connection reversed.

Any reading of 0.3 volt RMS (this corresponds to 0.2 milliamp. AC.) or more is excessive and indicates a potential shock hazard which must be corrected before returning the audio product to the owner.

FOR A COMPLETE DESCRIPTION OF THE OPERATION OF THIS UNIT, PLEASE REFER TO THE OPERATION MANUAL.

SPECIFICATIONS

SD-EX200 (For U.S.A.)

■ General

Power source	AC 120 V, 60 Hz
Power consumption	Power on: 76 W Power stand-by: 0.5 W
Dimensions	Width: 15"(380 mm) Height: 7-7/8"(200 mm) Depth: 4-3/4"(120 mm)
Weight	7.5 lbs. (3.4 kg)
Output terminals	Speakers: 4 ohms Headphones: 16 - 50 ohms (recommended: 32 ohms) Digital output (optical)
Input terminals	Auxiliary input: 500 mV/47 k ohms

■ Amplifier

Amplification system	64fs 1-bit switching (Remarks: fs = 44.1 kHz)
Power output	100 watts minimum RMS per channel into 4 ohms from 40 Hz to 20 kHz, 2 % total harmonic distortion
A/D noise shaping	7th-order ΔΣ (delta - sigma) modulation

■ CD player

Type	1-disc vertical type compact disc player
Signal readout	Non-contact, 3-beam semiconductor laser pickup
D/A converter	24-bit/96 k D/A converter
Frequency response	20 - 20,000 Hz
Dynamic range	101 dB (1 kHz)

■ Tuner

Frequency range	FM: 87.5 - 108 MHz AM: 530 - 1.720 kHz

CP-EX200 (For U.S.A.)

Type	2-way type speaker system 2" (5 cm) Tweeter 5-7/8" (15 cm) Woofer
Maximum input power	200 W
Rated input power	100 W
Impedance	4 ohms
Dimensions	Width: 7-1/2" (190 mm) Height: 11-7/16" (290 mm) Depth: 9-5/16" (235 mm)
Weight	8.4 lbs. (3.8 kg)/each

SD-EX200 (For Canada)

■ General

Power source	AC 120 V, 60 Hz
Power consumption	Power on: 76 W
Dimensions	Width: 380 mm (15") Height: 200 mm (7-7/8") Depth: 120 mm (4-3/4")
Weight	3.4 kg (7.5 lbs.)
Output terminals	Speakers: 4 ohms Headphones: 16 - 50 ohms (recommended: 32 ohms) Digital output (optical)
Input terminals	Auxiliary input: 500 mV/47 k ohms

■ Amplifier

Amplification system	64fs 1-bit switching (Remarks: fs = 44.1 kHz)
Output power	RMS: 200 W (100 W + 100 W) (1 % T.H.D.)
A/D noise shaping	7th-order ΔΣ (delta - sigma) modulation

■ CD player

Type	1-disc vertical type compact disc player
Signal readout	Non-contact, 3-beam semiconductor laser pickup
D/A converter	24-bit/96 k D/A converter
Frequency response	20 - 20,000 Hz
Dynamic range	101 dB (1 kHz)

■ Tuner

Frequency range	FM: 87.5 - 108 MHz AM: 530 - 1.720 kHz

CP-EX200 (For Canada)

Type	2-way type speaker system 5 cm (2") Tweeter 15 cm (5-7/8") Woofer
Maximum input power	200 W
Rated input power	100 W
Impedance	4 ohms
Dimensions	Width: 190 mm (7-1/2") Height: 290 mm (11-7/16") Depth: 235 mm (9-5/16")
Weight	3.8 kg (8.4 lbs.)/each

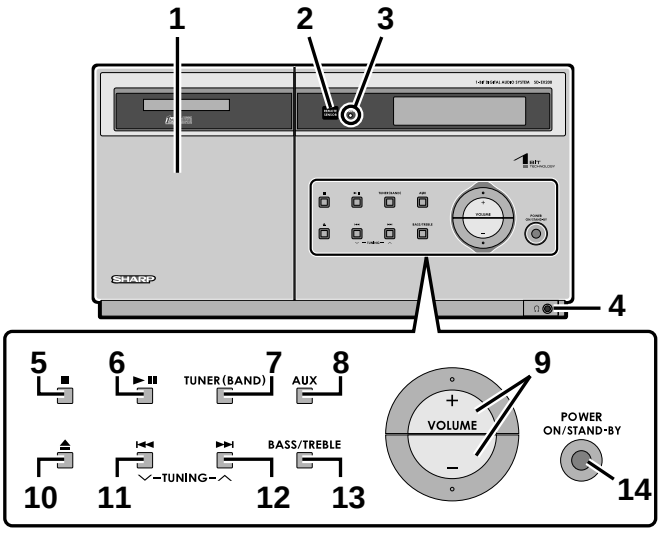
Specifications for this model are subject to change without prior notice.

NAMES OF PARTS

SD-EX200

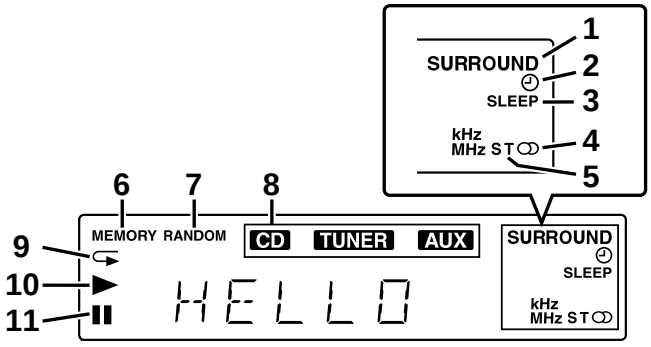
■ Front panel

1. CD Cover
2. Remote Sensor
3. Timer Set Indicator
4. Headphone Jack
5. CD Stop Button
6. CD Play/Pause Button
7. Tuner (Band) Button
8. Auxiliary Button
9. Volume Up and Down Buttons
10. CD Cover Open/Close Button
11. CD Track Down or Fast Reverse/Tuning Down Button
12. CD Track Up or Fast Forward/Tuning Up Button
13. Bass/Treble Button
14. Power On/Stand-by Button



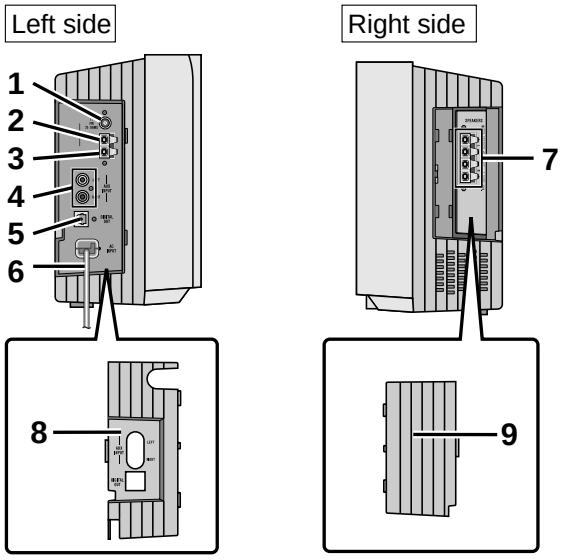
■ Display

1. Surround Indicator
2. Timer Play Indicator
3. Sleep Indicator
4. FM Stereo Receiving Indicator
5. FM Stereo Mode Indicator
6. CD Memory Indicator
7. Random Play Indicator
8. Function Indicators
9. CD Repeat Play Indicator
10. CD Play Indicator
11. CD Pause Indicator



■ Side panel

1. FM 75 Ohms Antenna Jack
2. AM Antenna Ground Terminal
3. AM Antenna Terminal
4. Auxiliary Input Jacks
5. Digital Output Jack
6. AC Power Cord
7. Speaker Terminals
8. Left Side Cover
9. Right Side Cover

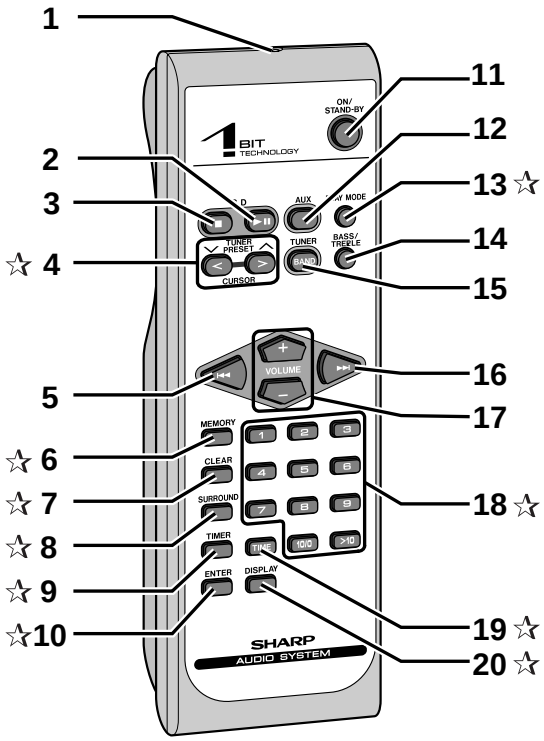


SD-EX200

■ Remote control

1. Remote Control Transmitter
2. CD Play/Pause Button
3. CD Stop Button
4. Cursor/Tuner Preset Buttons
5. CD Track Down or Fast Reverse/Tuning Down Button
6. CD Memory Button
7. Program Clear Button
8. Surround Button
9. Timer Button
10. Enter Button
11. Power On/Stand-by Button
12. Auxiliary Button
13. CD Play Mode Select Button
14. Bass/Treble Button
15. Tuner (Band) Button
16. CD Track Up or Fast Forward/Tuning Up Button
17. Volume Up and Down Buttons
18. CD/Tuner Direct Buttons
19. CD Time Display Button
20.Clock Display/Dimmer Button

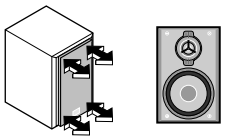
Buttons with "☆" mark in the illustration or highlighted in bold on the list can be operated on the remote control only.

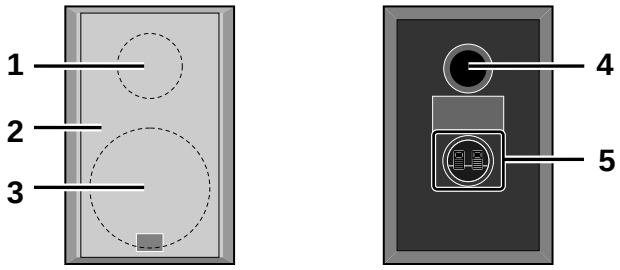


CP-EX200

1. Tweeter
2. Speaker Grille
3. Woofer
4. Bass Reflex Duct
5. Speaker Terminals

Speaker grilles are removable:
Make sure nothing comes into contact with the speaker diaphragms when you remove the speaker grilles.





DISASSEMBLY

Caution on Disassembly

Follow the below-mentioned notes when disassembling the unit and reassembling it, to keep it safe and ensure excellent performance:

1. Take compact disc out of the unit.
2. Be sure to remove the power supply plug from the wall outlet before starting to disassemble the unit.
3. Take off nylon bands or wire holders where they need to be removed when disassembling the unit. After servicing the unit, be sure to rearrange the leads where they were before disassembling.
4. Take sufficient care on static electricity of integrated circuits and other circuits when servicing.

SD-EX200

STEP	REMOVAL	PROCEDURE	FIGURE
1	Rear Cabinet	1. Screw ..... (A1) x7	6-1
2	Main PWB/ Tuner Unit (Note)	1. Screw ..... (B1) x4 2. Jack Cover, Left ..... (B2) x1 3. Screw ..... (B3) x8 4. Socket ..... (B4) x9 5. Flat Cable ..... (B5) x1	6-2
3	Front Panel	1. Screw ..... (C1) x3 2. Hook ..... (C2) x1 3. Socket ..... (C3) x1	6-3
4	Power PWB	1. Screw ..... (D1) x6 2. Bracket ..... (D2) x1	6-3
5	1-Bit Amp. Unit	1. Screw ..... (E1) x4	6-3
6	Display PWB	1. Screw ..... (F1) x6 2. Frame Support ..... (F2) x1 3. Screw ..... (F3) x6 4. Socket ..... (F4) x2	6-4 7-1 6-4, 7-1
7	Headphones PWB	1. Screw ..... (G1) x1	6-4
8	Switch PWB	1. Screw ..... (H1) x1	7-1
9	CD Mechanism	1. Screw ..... (J1) x6	7-1
10	Protect Circuit PWB/1-Bit Amp. Shield Case	1. Screw ..... (K1) x2 2. Screw ..... (K2) x2 3. Bracket ..... (K3) x1 4. Screw ..... (K4) x3	7-2
11	1-Bit Amp. PWB	1. Screw ..... (L1) x3	7-3

Note:

1. After removing the connector for the optical pickup from the connector, wrap the conductive aluminium foil around the front end of the connector so as to protect the optical pickup from electro-static damage.

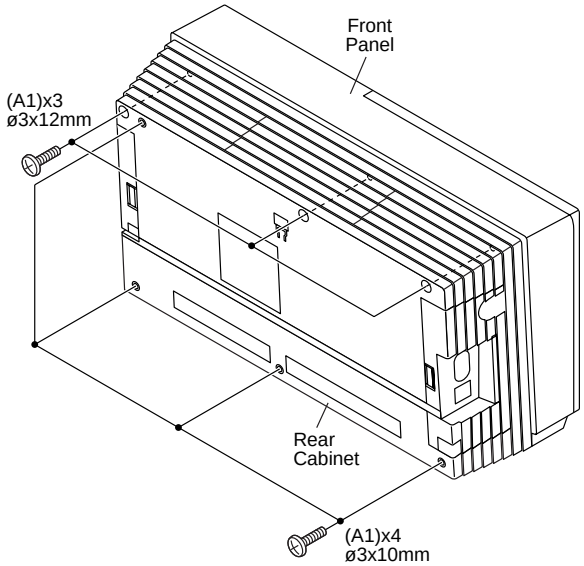


Figure 6-1

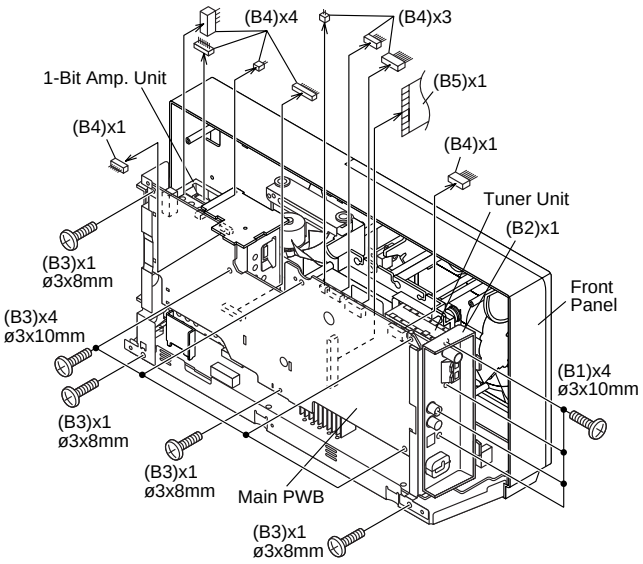


Figure 6-2

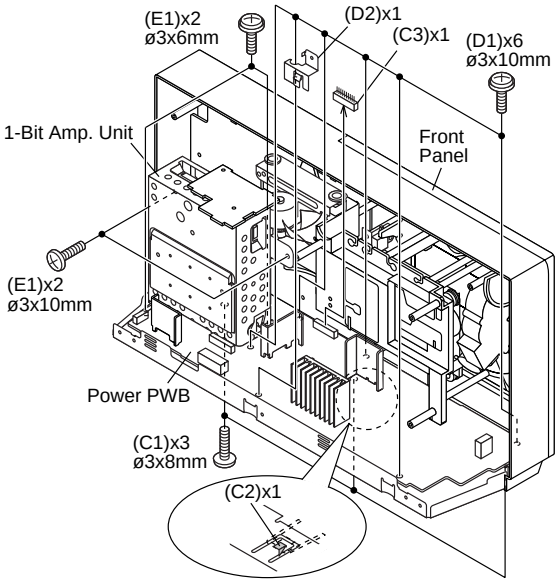


Figure 6-3

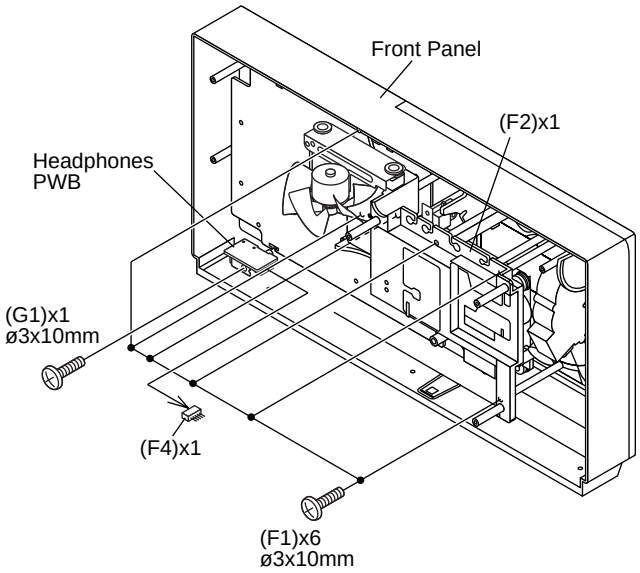


Figure 6-4

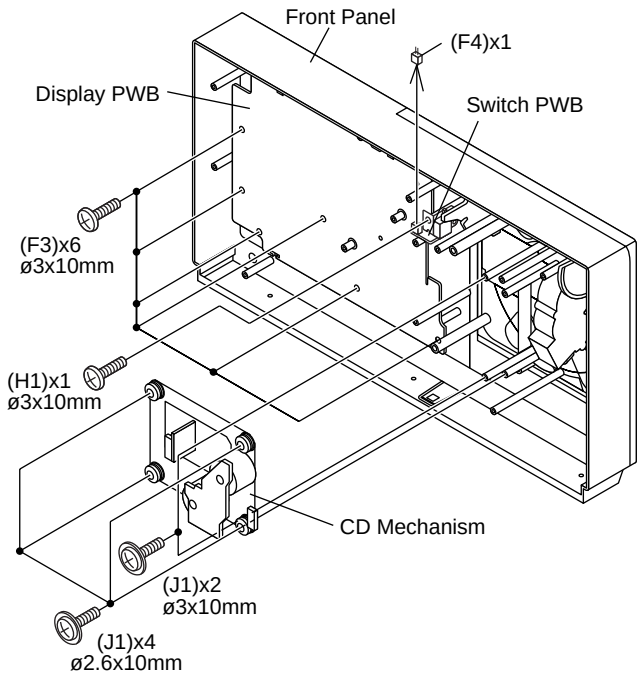


Figure 7-1

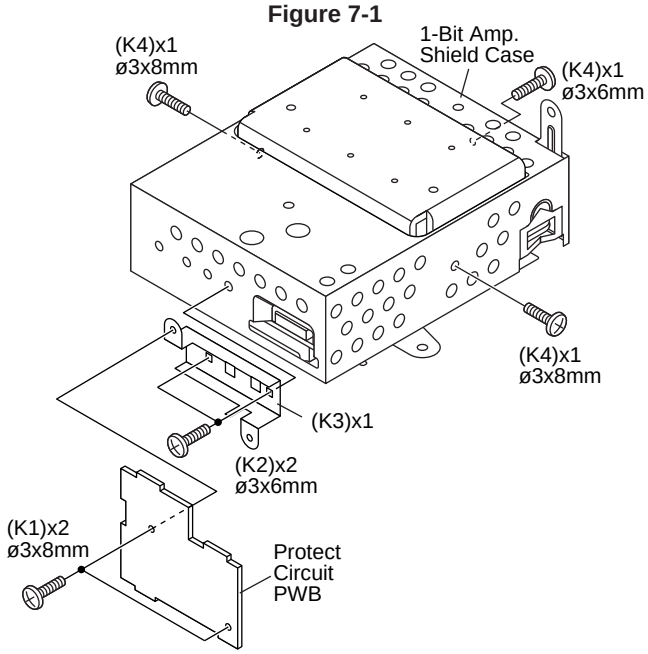


Figure 7-2

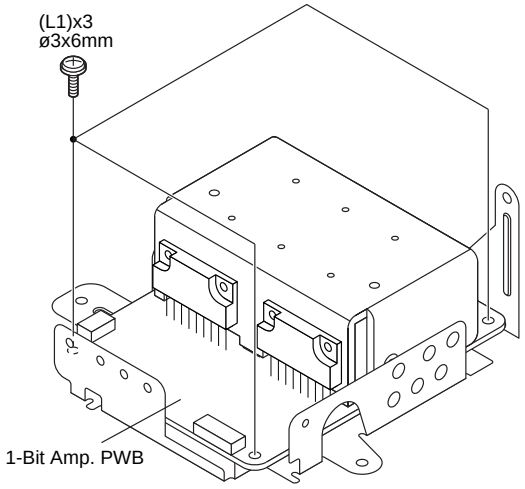


Figure 7-3

CP-EX200			
STEP	**REMOVAL**	**PROCEDURE**	**FIGURE**
1	Front Panel	1. Net Frame Ass'y ..... (A1) x1 2. Catching Holder ..... (A2) x4 3. Screw ..... (A3) x4	7-4
2	Woofer	1. Screw ..... (B1) x4	7-5
3	Tweeter	1. Screw ..... (C1) x2	7-5

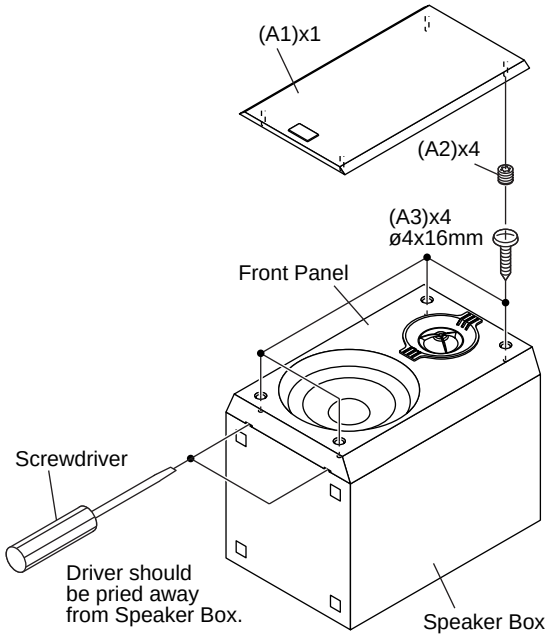


Figure 7-4

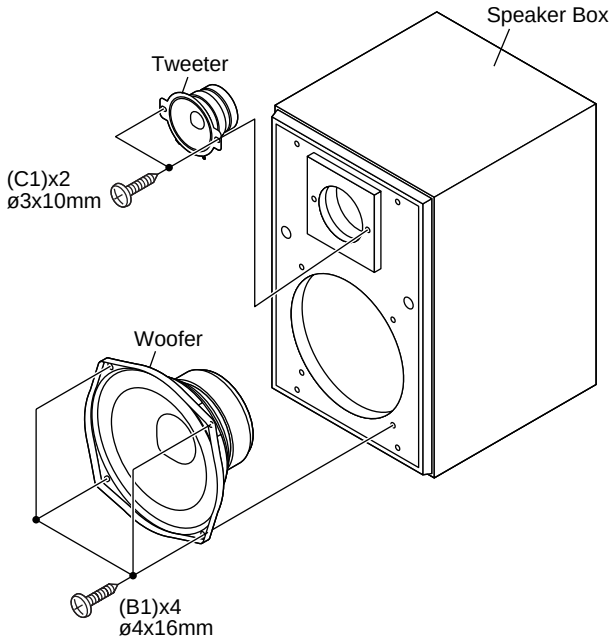


Figure 7-5

REMOVING AND REINSTALLING THE MAIN PARTS

CD MECHANISM SECTION

Perform steps 1, 2, 3, 6 and 9 of the disassembly method to remove the CD mechanism.

How to remove the pickup unit (See Fig. 8-1)

1. Remove the mechanism cover, paying attention to the pawls (A1) x 4 pcs.
2. Remove the screws (A2) x 2 pcs., to remove the shaft (A3) x 1 pc.
1. Remove the stop washer (A4) x 1 pc., to remove the gear (A5) x 1 pc.
3. Remove the pickup.

Note

After removing the connector for the optical pickup from the connector wrap the conductive aluminium foil around the front end of connector so as to protect the optical pickup from electrostatic damage.

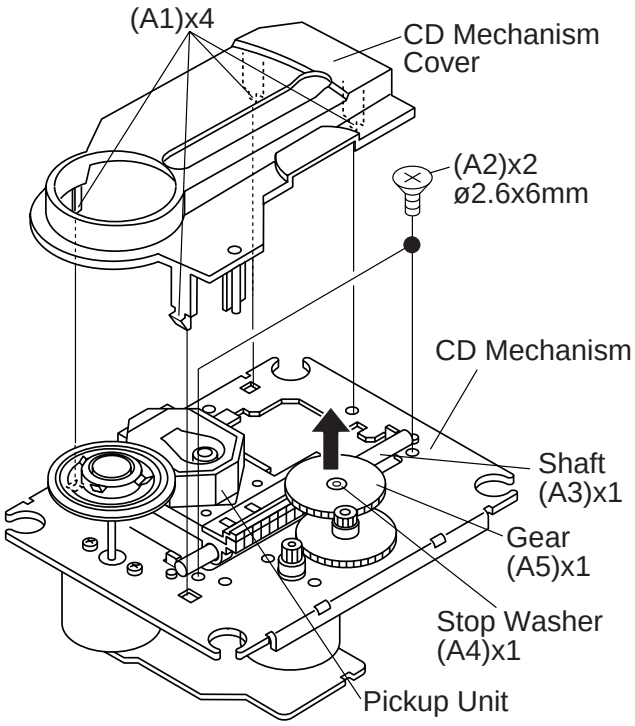


Figure 8-1

How to Remove the CD door motor (See Fig. 8-2.)

1. Remove the screws (B1) x 2 pcs.
2. Remove the CD door motor.

Caution:

Be careful not to damage the gear.
(If the gear is damaged, noise is heard when searching.)

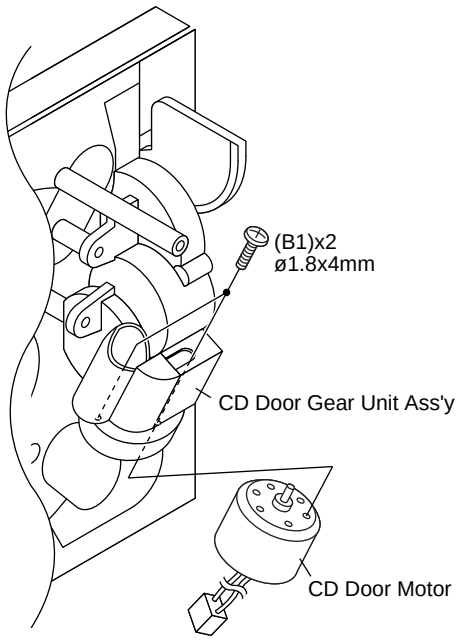


Figure 8-2

ADJUSTMENT

CD SECTION

● Adjustment

Since this CD system incorporates the following automatic adjustment functions, readjustment is not needed when replacing the pickup. Therefore, different PWBs and pickups can be combined freely.
Each time a disc is changed, these adjustments are preformed automatically. Therefore, playback of each disc can be preformed under optimum conditions.

1-BIT AMP. SECTION

● 1-bit amplifier's output offset voltage adjustment

Adjust VRA100 and VRA101 so that the DC voltage between speaker terminals + and - is set to 0 ± 5 mV at AC 120 V.

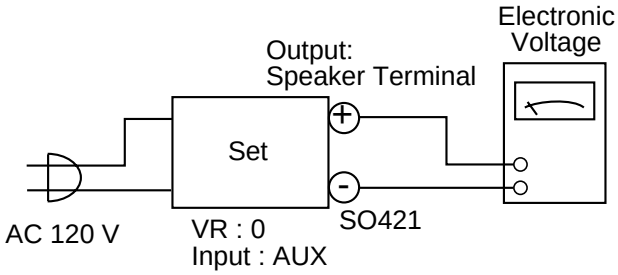


Figure 9-1 OUTPUT OFFSET LEVEL

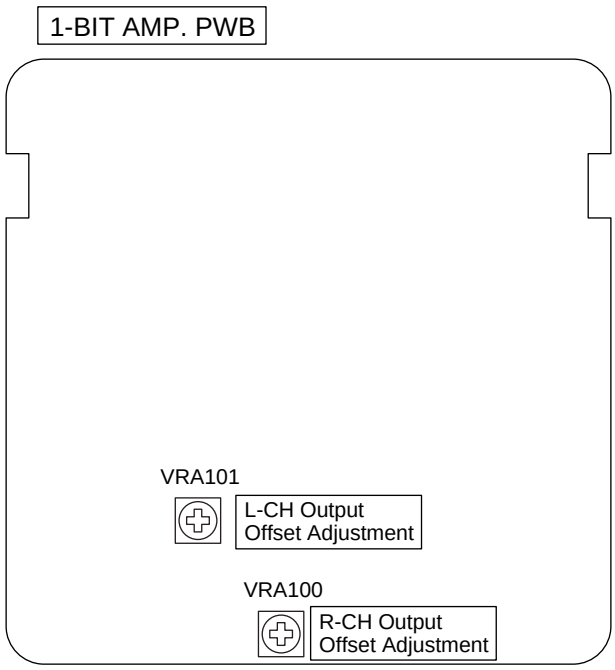


Figure 9-2

DESCRIPTION OF CIRCUIT FOR 1-BIT UNIT (SEE THE WIRING DIAGRAMS ON PAGES 26 AND 27.)

Input section
Signals from CNA101 are coupled by CA100 and CA101 and then sent into the A/D converter IC (ICA100).

⊿Σ modulation 1-bit converter
Signals from the A/D converter IC (ICA100) are converted to 1-bit signals and sent differentially. Refer to the technical manual of SM-SX100 for the details of conversion to 1-bit signals.

Low pass filter circuit
1-bit signals switched by the output IC (ICA101 and ICA102) are converted to analog signals through the lowpass filter consisting of LA101 ~ LA107. The low pass filter functions when a frequency exceeds 20 kHz, and reduces it by approx. 3 dB when it reaches approx. 40 kHz.

Dynamic feedback circuit
The 1-bit signals switched by the output IC (ICA101 and ICA102) oscillate between positive and negative voltage. After resistance-division, the signals are fed back to the A/D converter IC (ICA100) through NF resistance 75 kohms (RA155 ~ RA158). The peak-to-peak voltage reaches approx. 5 V.

TO CHECK AND CANCEL PROTECT CIRCUIT DETECTION LINE

1: In this model the microcomputer (IC701) detects the following malfunctions once power is supplied, and cuts off power from all the parts except for the circuit driving the microcomputer.
① Abnormal drop in the output voltage of each regulator (below approx. 1.5 V)
Power is cut off instantly without display.
② Output offset over voltage of the 1-bit amplifier (above approx. DC 2 V)
③ Mains overvoltage of the 1-bit amplifier (above approx. DC 5.5 A)
Power is cut off instantly without display.
④ Defects in the cooling fan or its drive circuit (when stopped)
Power is cut off after “FAN LOCK” is displayed.

2: Criteria for abnormality, and checking and cancelling the detection line
The criteria:
① The voltage of pin 6 (PROTECT) on IC701.
② The voltage of pin 32 (OFFSET) on IC701: Low (below approx. 1 V) (abnormal) and High (above approx. 2.5 V) (normal) .
③ The motor stops when it is above approx. 1 V.
If the voltage of pin 10 (FAN LOCK) on IC701 is not between approx. 0.21 V and 1.20 V whilst the motor rotation is controlled, it is judged as abnormal.

Checking and cancelling the detection line:
Caution: If the PROTECT/OFFSET detection line is disconnected in case of ①, ② or ③ above, a protective operation does not function. The disconnection by output short-circuit of each regulator may cause the parts or PCBs to burn out and therefore do not disconnect the detection line when the cause is not identified.
(Power supply can be detected with an oscilloscope or like during approx. 0.5 seconds after an abnormality is found. Note that the detection would be difficult with a tester as the voltage rises and falls rapidly.)

① Abnormal drop in the output voltage of each regulator
Connect a measuring device (such as an oscilloscope) to the stabilizing output of the regulator, and turn on the unit. If the detected voltage is extremely lower than the voltage on the circuit diagram (below approx. 1.5 V), the regulator itself or the circuit is defective.

② Output offset overvoltage of the 1-bit amplifier
Adjust the voltage of the output offset. If a protective operation is still activated, ICA401 on the 1-bit amplifier could be defective (the detection circuit of the speaker output DC voltage).

TEST MODE

During POWER OFF Mode, push below each 2 buttons and [POWER] button.
Then enter to each TEST MODE.

Version Display

Other Destination : [ME****]
Version Display : ME0701A_ (07: MONTH; 01: DAY; A/B/C (MICOM VERSION)

Notes:
Micom version will be display when entering to Button and Display Test Mode only. (Display for 2 seconds)

No.	Key	Test Mode
1	[SKIP UP] + [VOLUME DOWN]	ALL CLEAR (RESET)
2	[CD STOP] + [SKIP UP]	BUTTON & DISPLAY TEST
3	[CD PLAY/PAUSE] + [AUX]	CD TEST
4	[CD PLAY/PAUSE] + [SKIP UP]	CD TRAY AGING TEST
5	[TUNER (BAND)] + [VOLUME DOWN]	TUNER PRESET MEMORY CLEAR
6	[TUNER (BAND)] + [VOLUME UP]	TUNER PRESET MEMORY FOR PRODUCTION
7	[TUNER (BAND)] + [CD STOP]	RDS TUN SM
8	[AUX] + [VOLUME UP]	AUX TEST

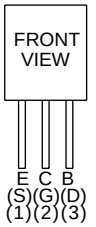
NOTES ON SCHEMATIC DIAGRAM

- Resistor:
  To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with “Fusible” is a fuse type.
- Capacitor:
  To indicate the unit of capacitor, a symbol P is used: this symbol P means pico-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression “capacitance/withstand voltage” is used.
  (CH), (TH), (RH), (UJ): Temperature compensation
  (ML): Mylar type
  (P.P.): Polypropylene type
- Schematic diagram and Wiring Side of P.W.Board for this model are subject to change for improvement without prior notice.
- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
  1. In the tuner section,
     indicates AM
     indicates FM stereo
  2. In the CD section, the CD is stopped.
- Parts marked with “ ⚠ ” (⊏ ═ ═ ═ ⊐) are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SW4	PICKUP IN	ON—OFF
SW601	VOLUME DOWN	ON—OFF
SW602	VOLUME UP	ON—OFF
SW604	SKIP/TUNING UP	ON—OFF
SW606	AUX	ON—OFF
SW607	TUNER (BAND)	ON—OFF
SW608	STOP	ON—OFF

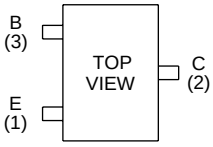
REF. NO	DESCRIPTION	POSITION
SW609	ON/STAND-BY	ON—OFF
SW610	OPEN/CLOSE	ON—OFF
SW611	BASS/TREBLE	ON—OFF
SW612	SKIP/TUNING DOWN	ON—OFF
SW615	PLAY/PAUSE	ON—OFF
SW771	CD DOOR OPEN/CLOSE	ON—OFF

TYPES OF TRANSISTOR AND LED

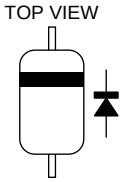


2SK246 GR
KTA1023 Y
KTA1266 GR
KTA1270 Y
KTA1271 Y
KTC2874 B

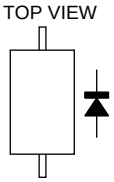
KTC3199 GR
KTC3203 Y
KRA107 M
KRC102 M
KRC104 M
KRC107 M



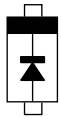
2SB709 AR
2SD601 AR
KRA102 S
KRC102 S
KRC104 S
KRC107 S
KTA1504 GR
KTC3875 GR



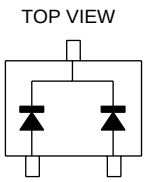
AG01Z
AK09
DS1SS133
EK19
D1NL20U



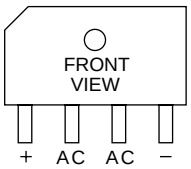
SFPW56
GD1N4004



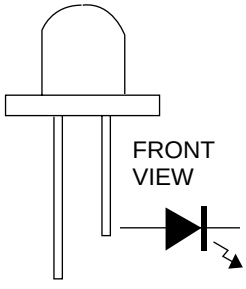
MA111



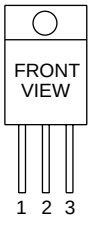
KDS226
MA132WA
MA132WK



D5SB60

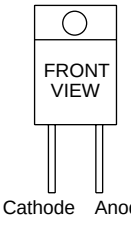


304BC2E9
304HT2P
304VT2E2
A503BC2E



1. Anode
2. No Contact
3. Cathode

SARS03



FMLG22S

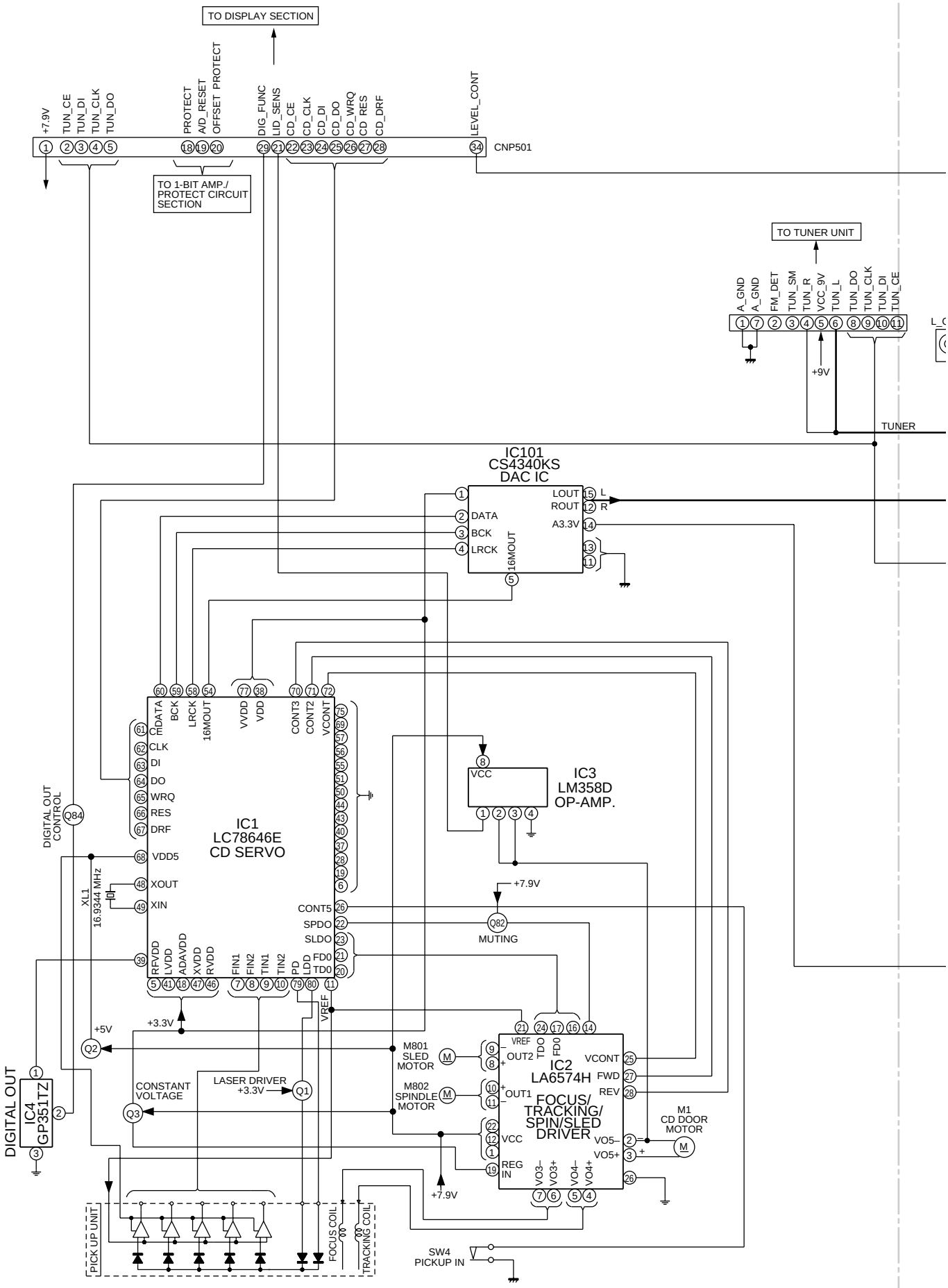


Figure 12 BLOCK DIAGRAM (1/6)

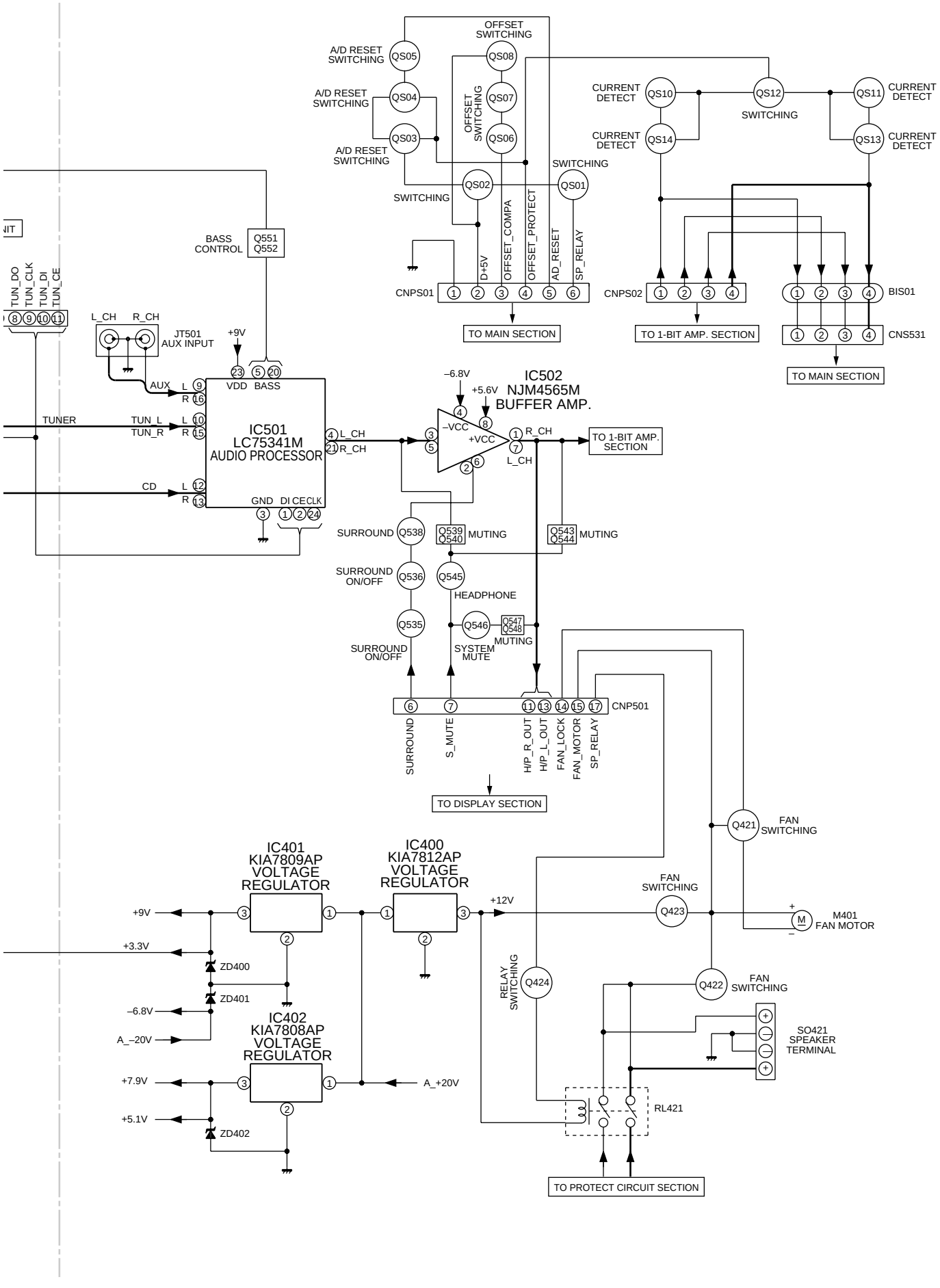


Figure 13 BLOCK DIAGRAM (2/6)

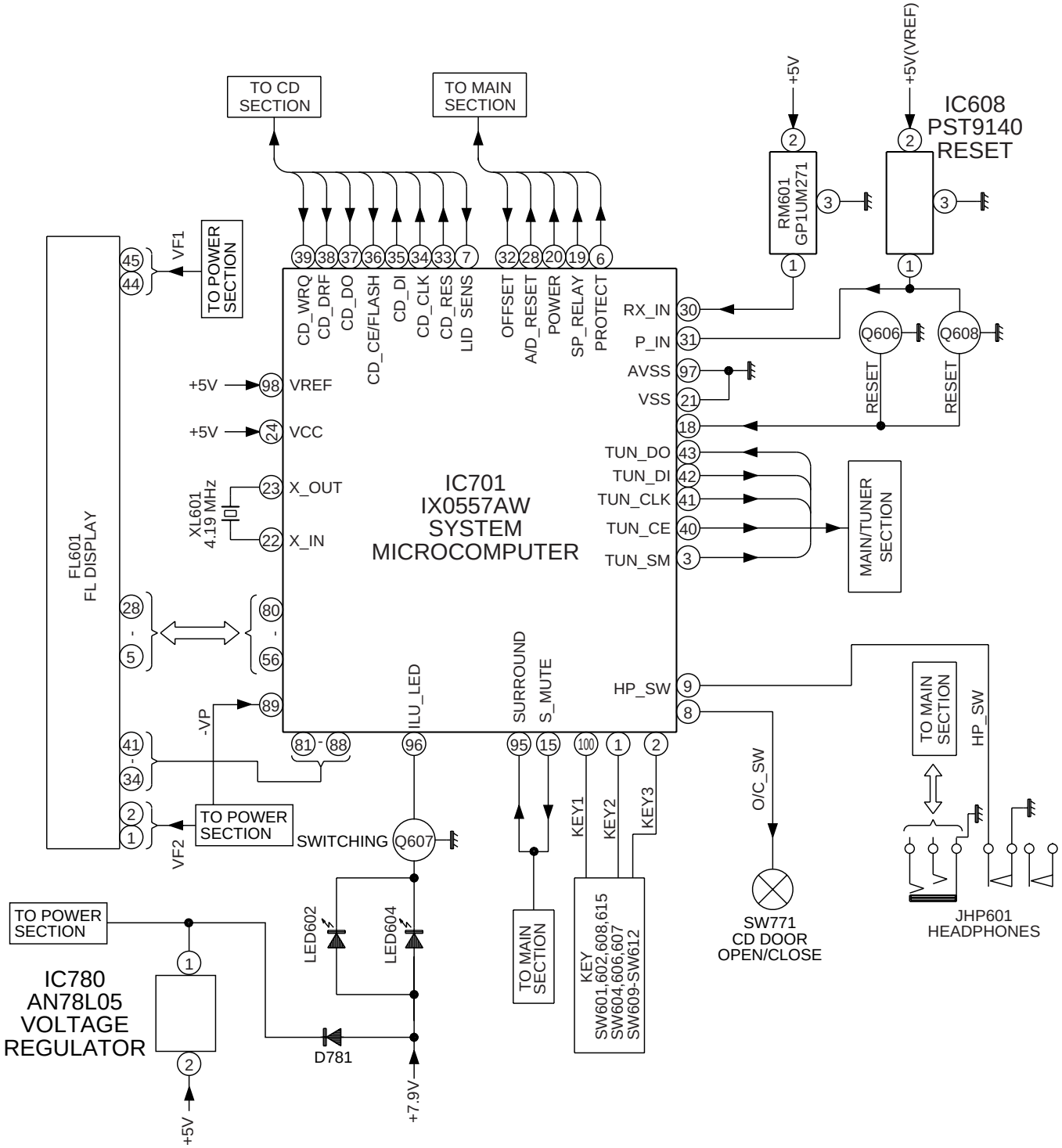


Figure 14 BLOCK DIAGRAM (3/6)

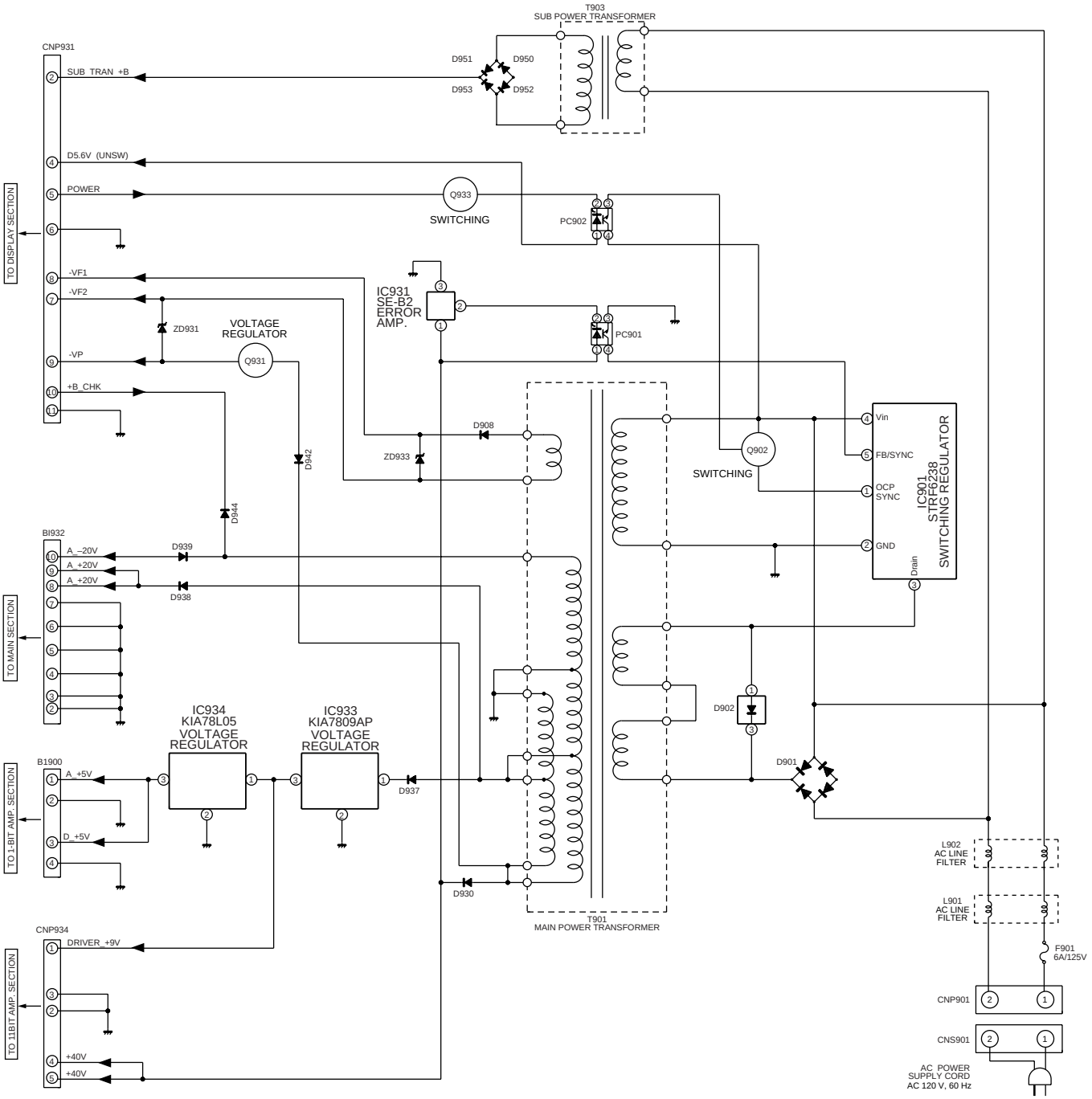


Figure 15 BLOCK DIAGRAM (4/6)

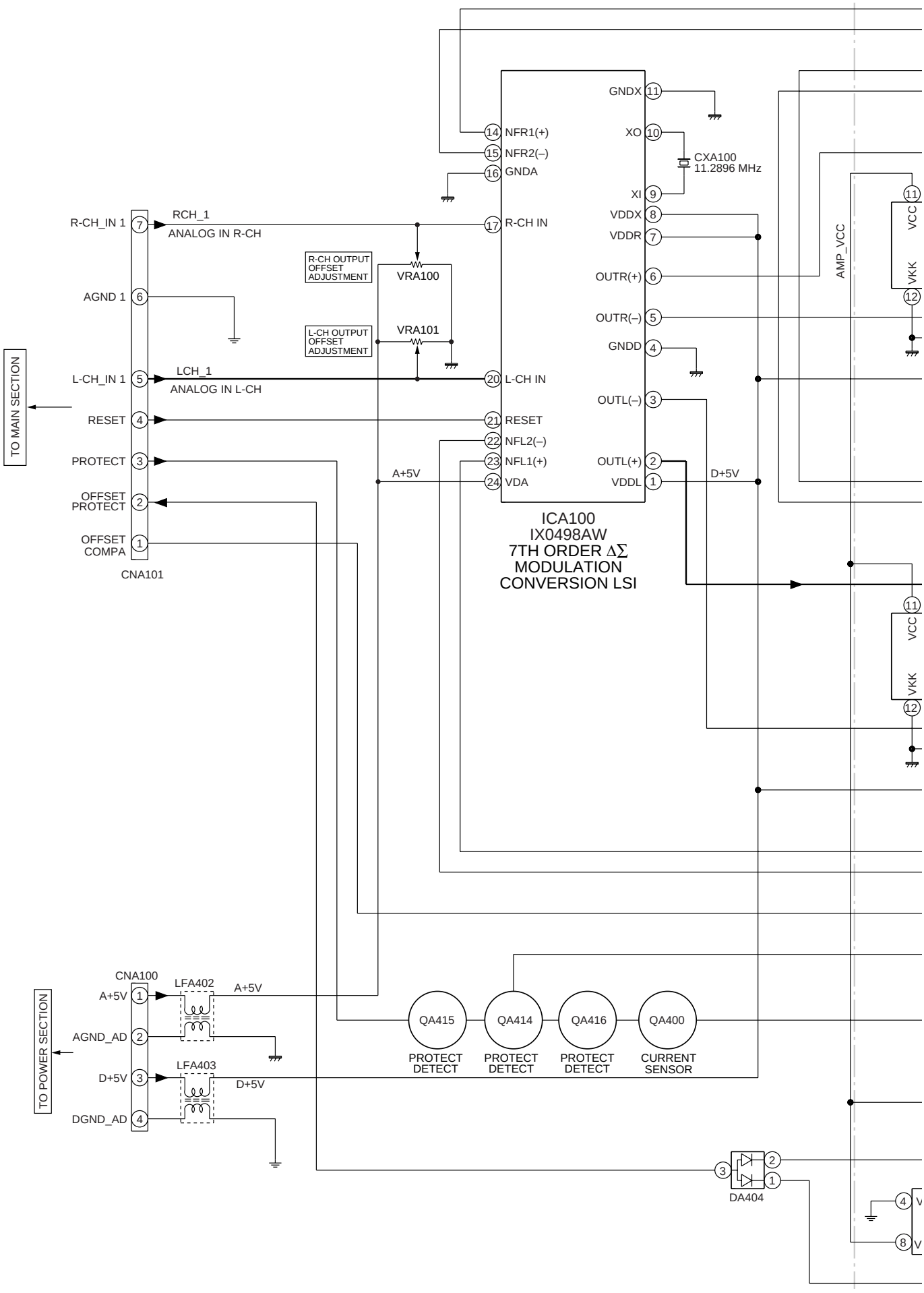


Figure 16 BLOCK DIAGRAM (5/6)

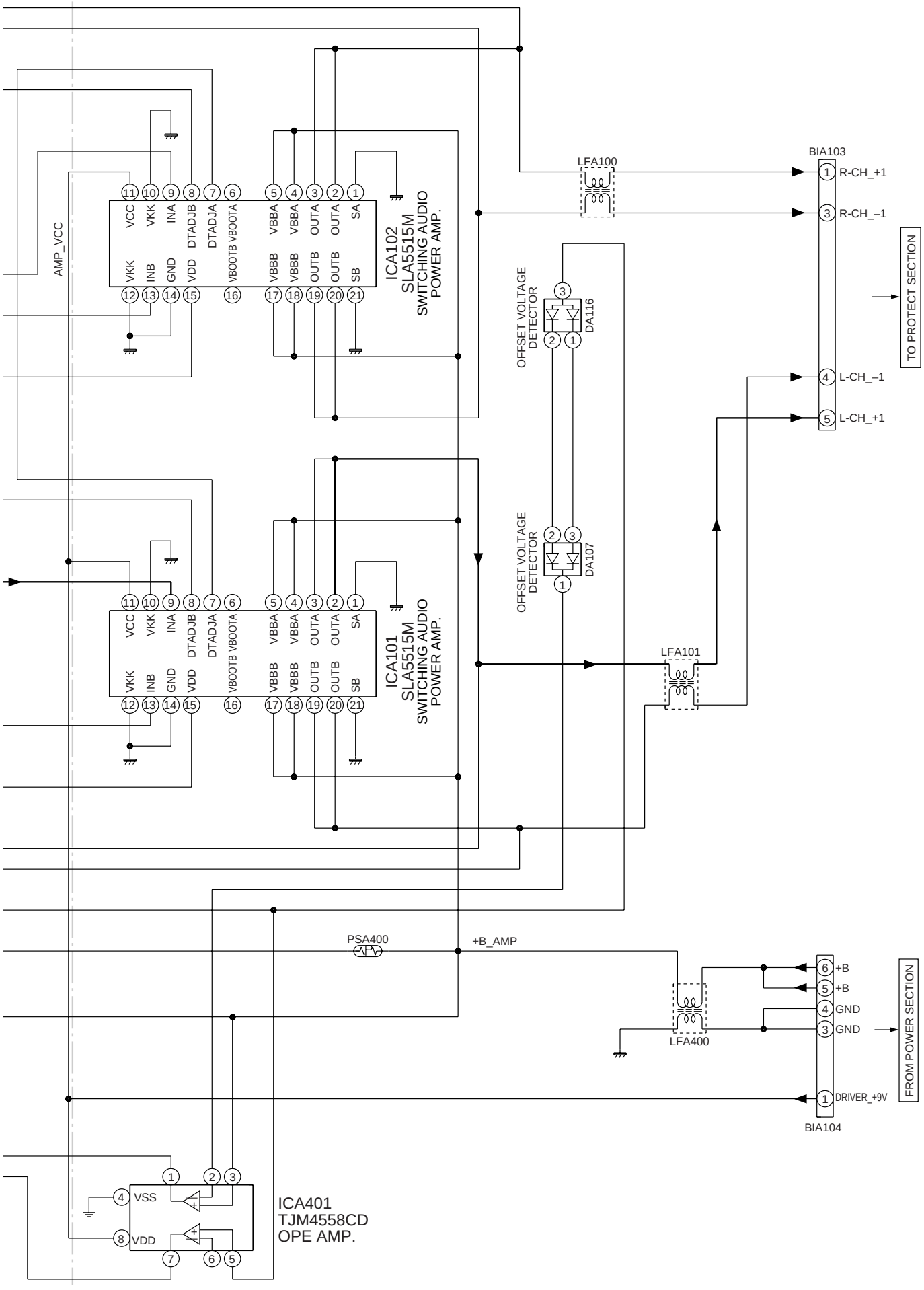
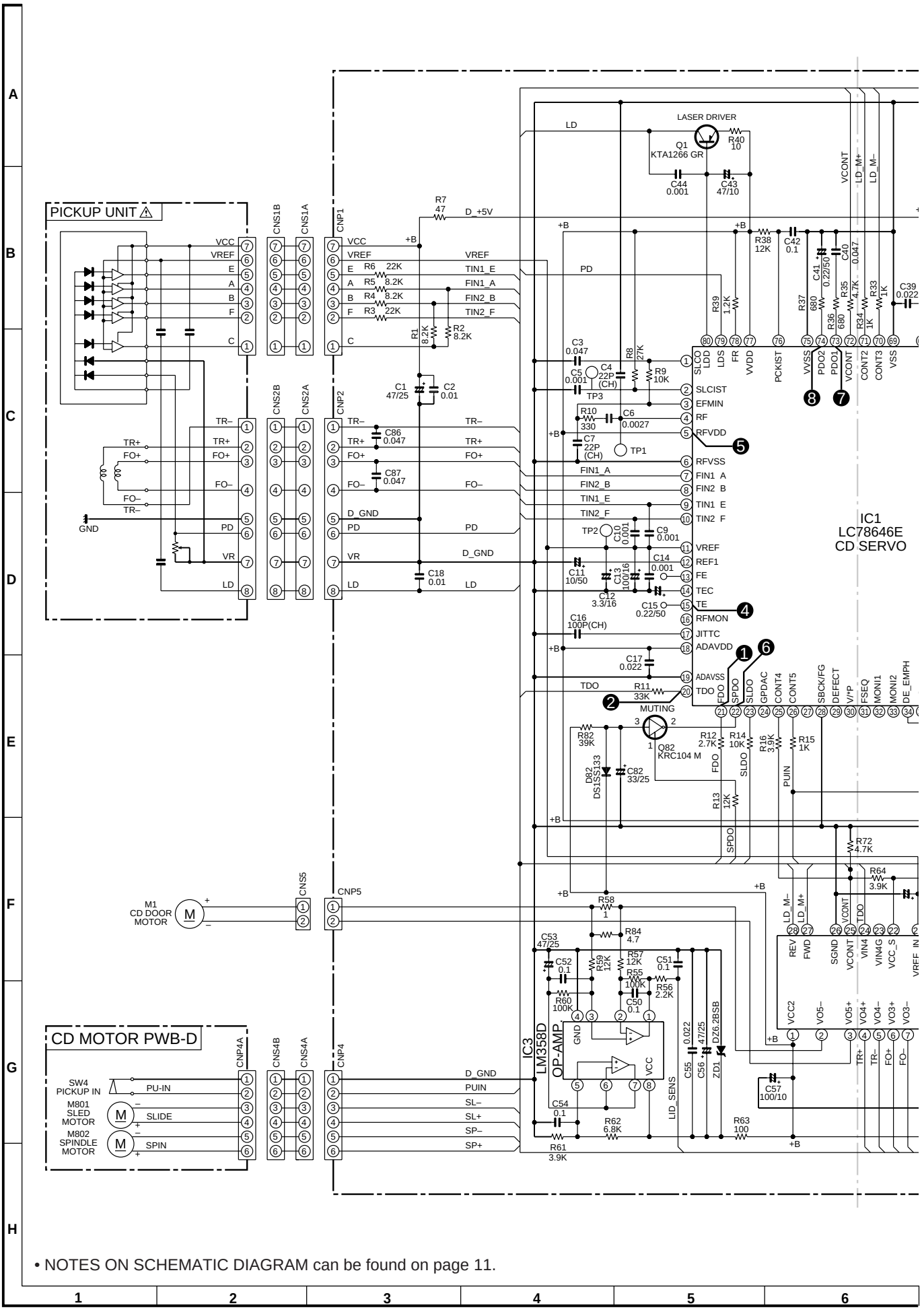
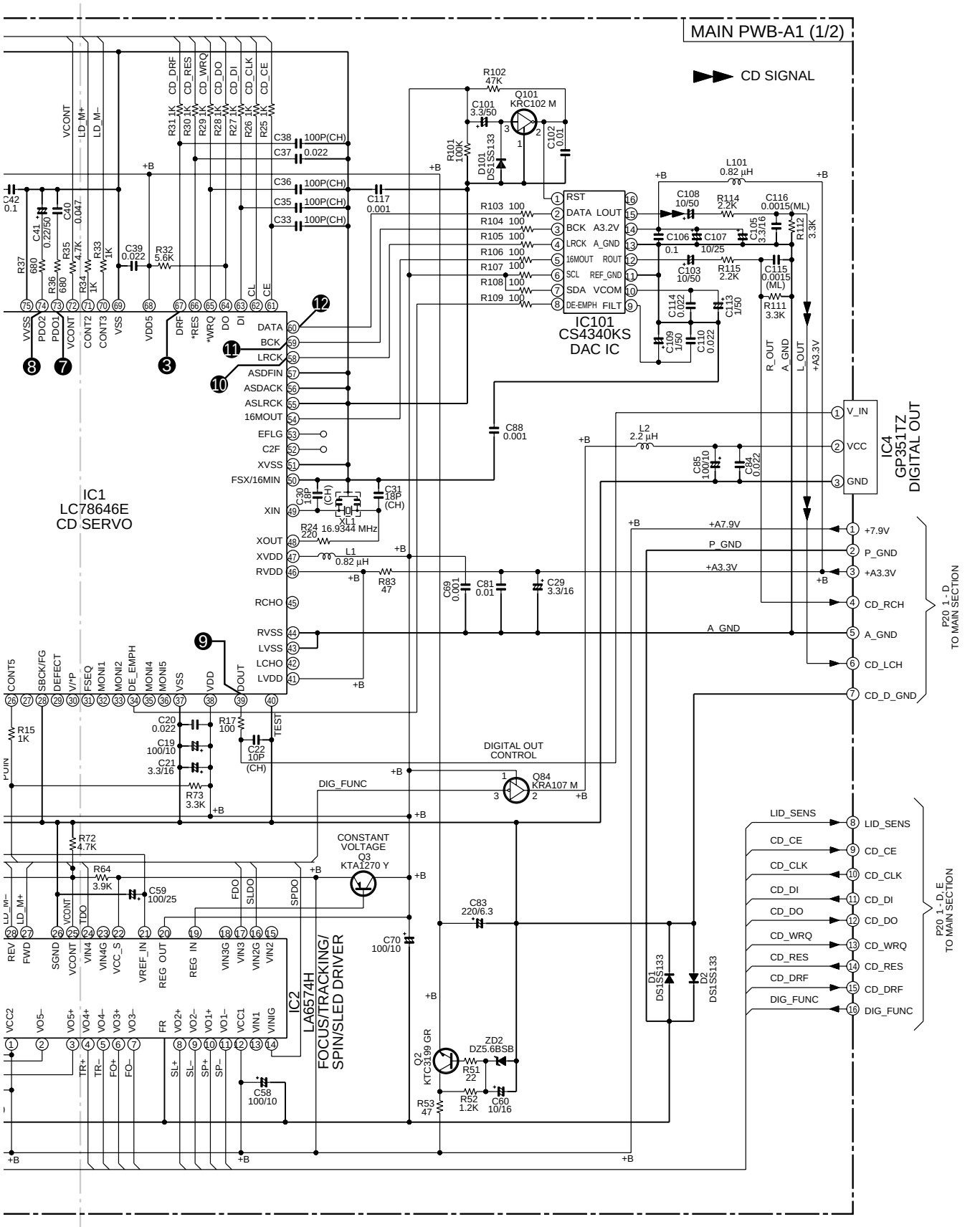


Figure 17 BLOCK DIAGRAM (6/6)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 11.

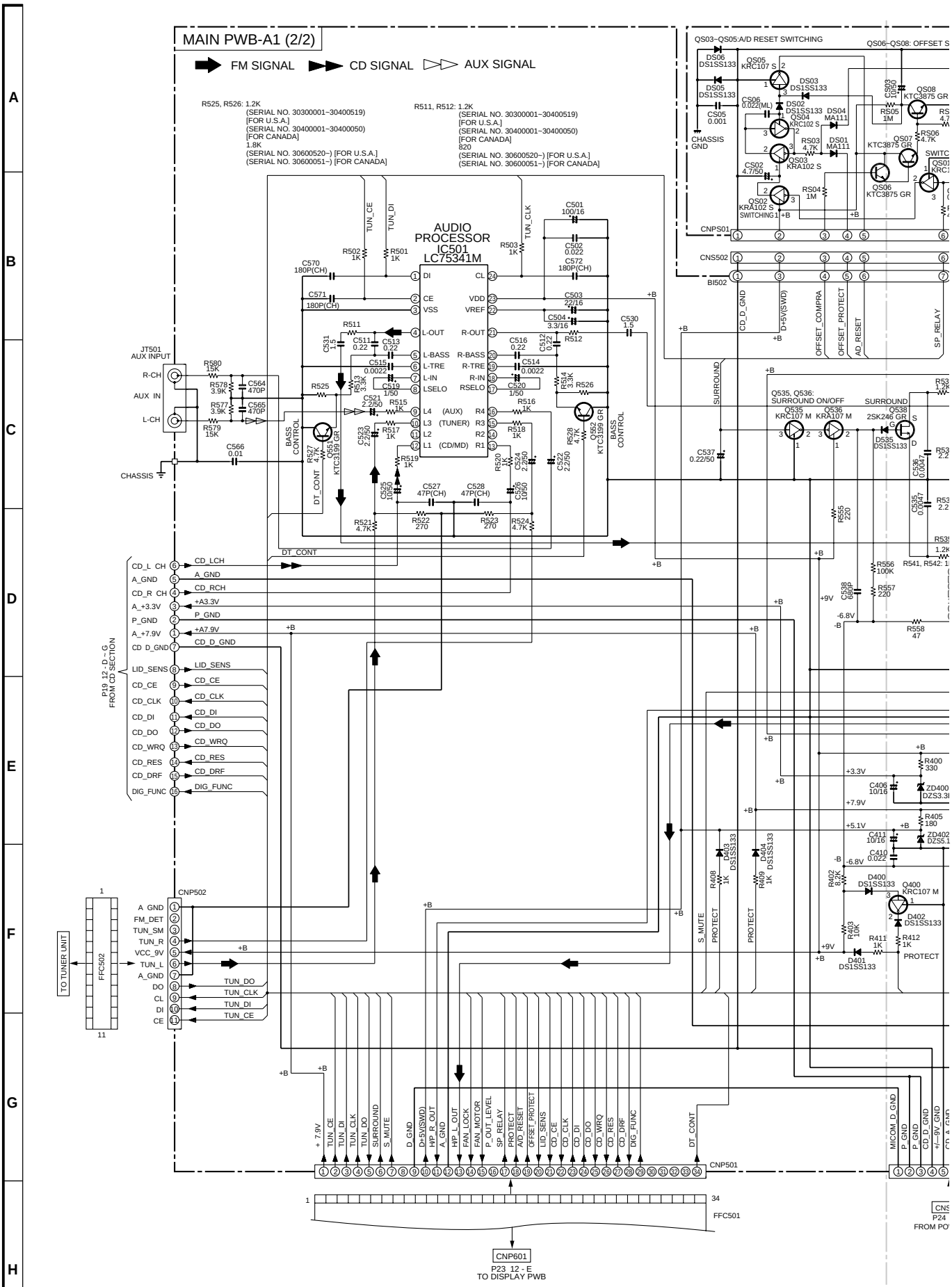
Figure 18 SCHEMATIC DIAGRAM (1/10)



• The numbers ❶ to ⓬ are waveform numbers shown in page 36.

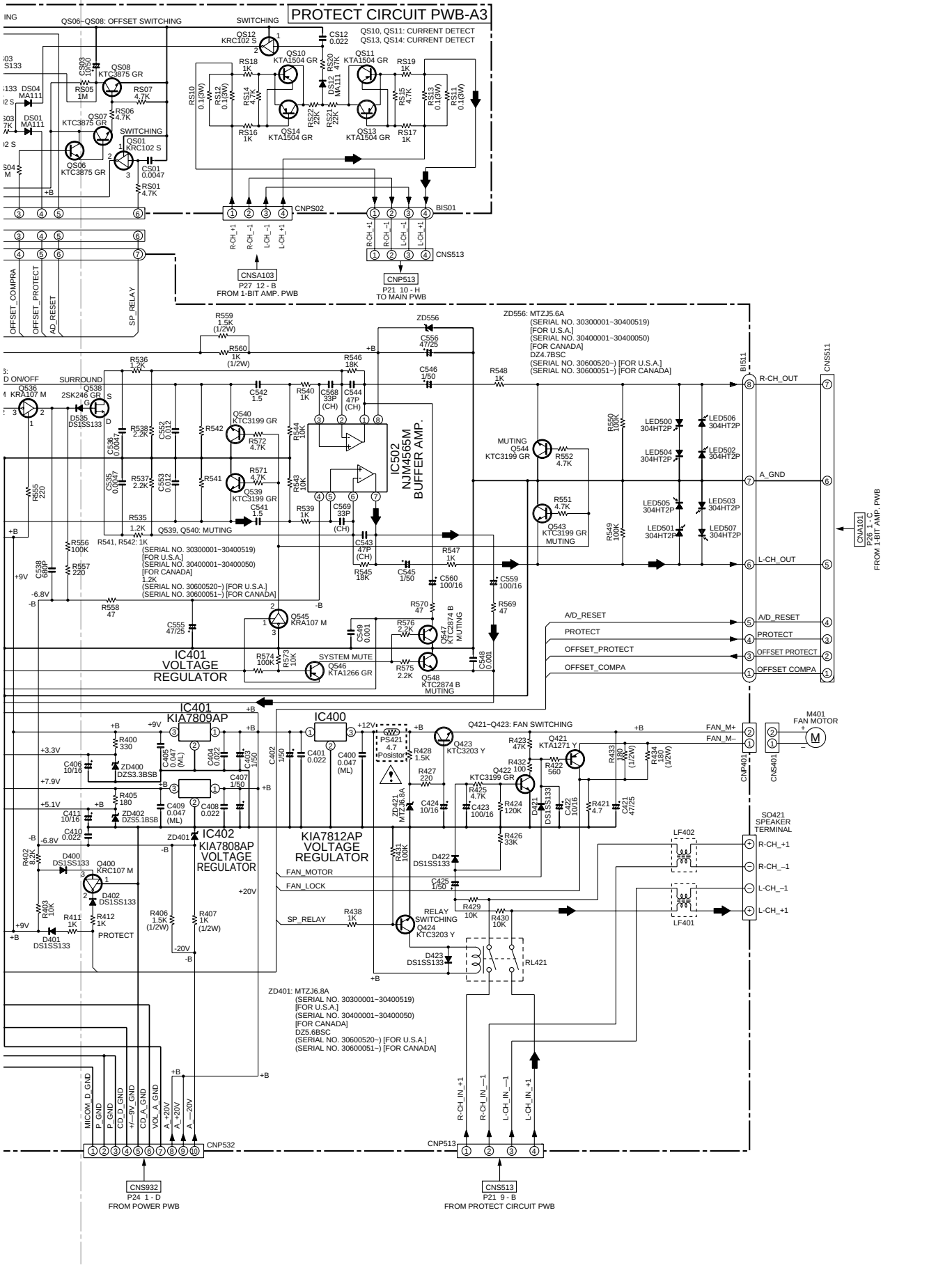
7	8	9	10	11	12

Figure 19 SCHEMATIC DIAGRAM (2/10)



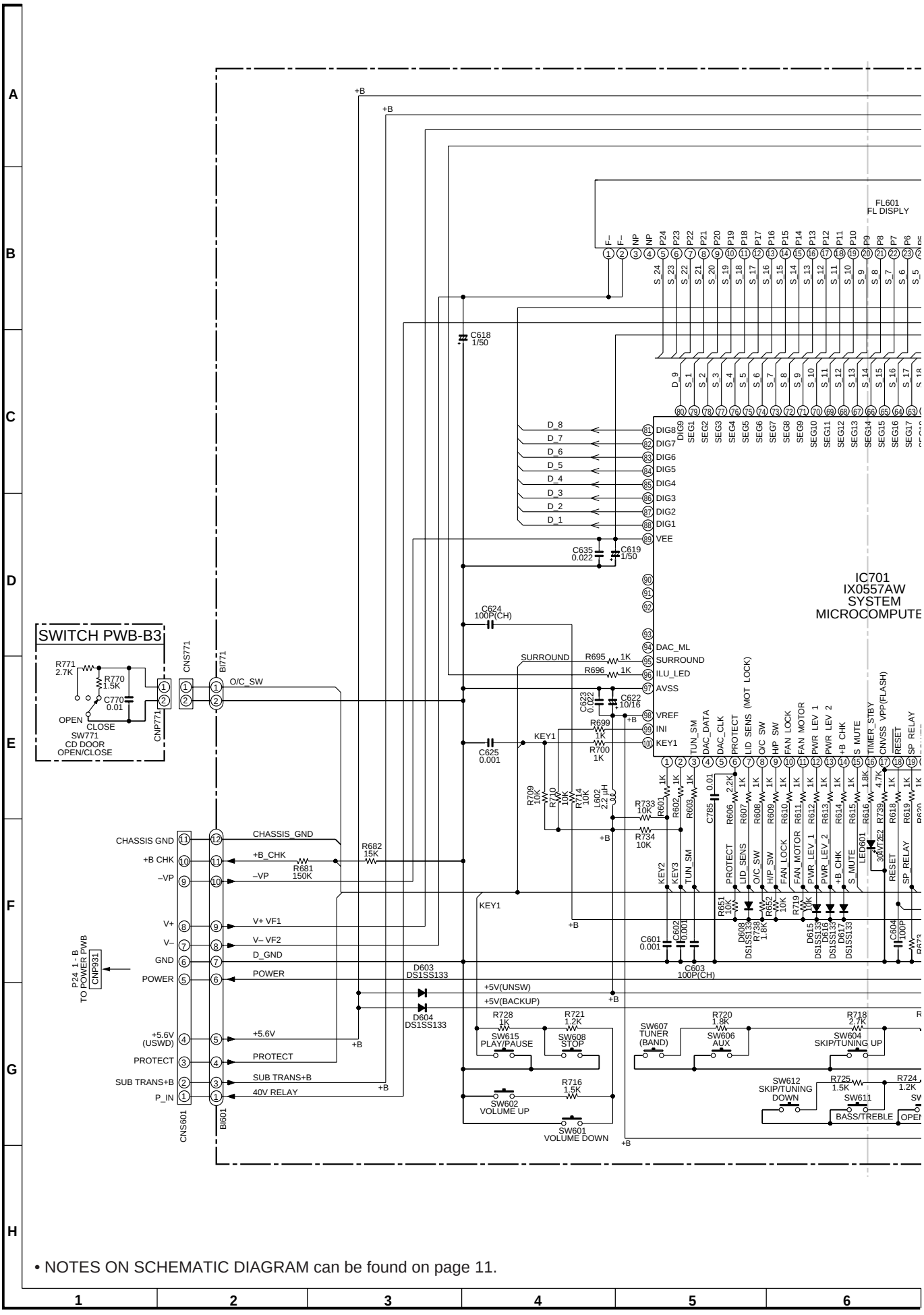
• NOTES ON SCHEMATIC DIAGRAM can be found on page 11.

Figure 20 SCHEMATIC DIAGRAM (3/10)



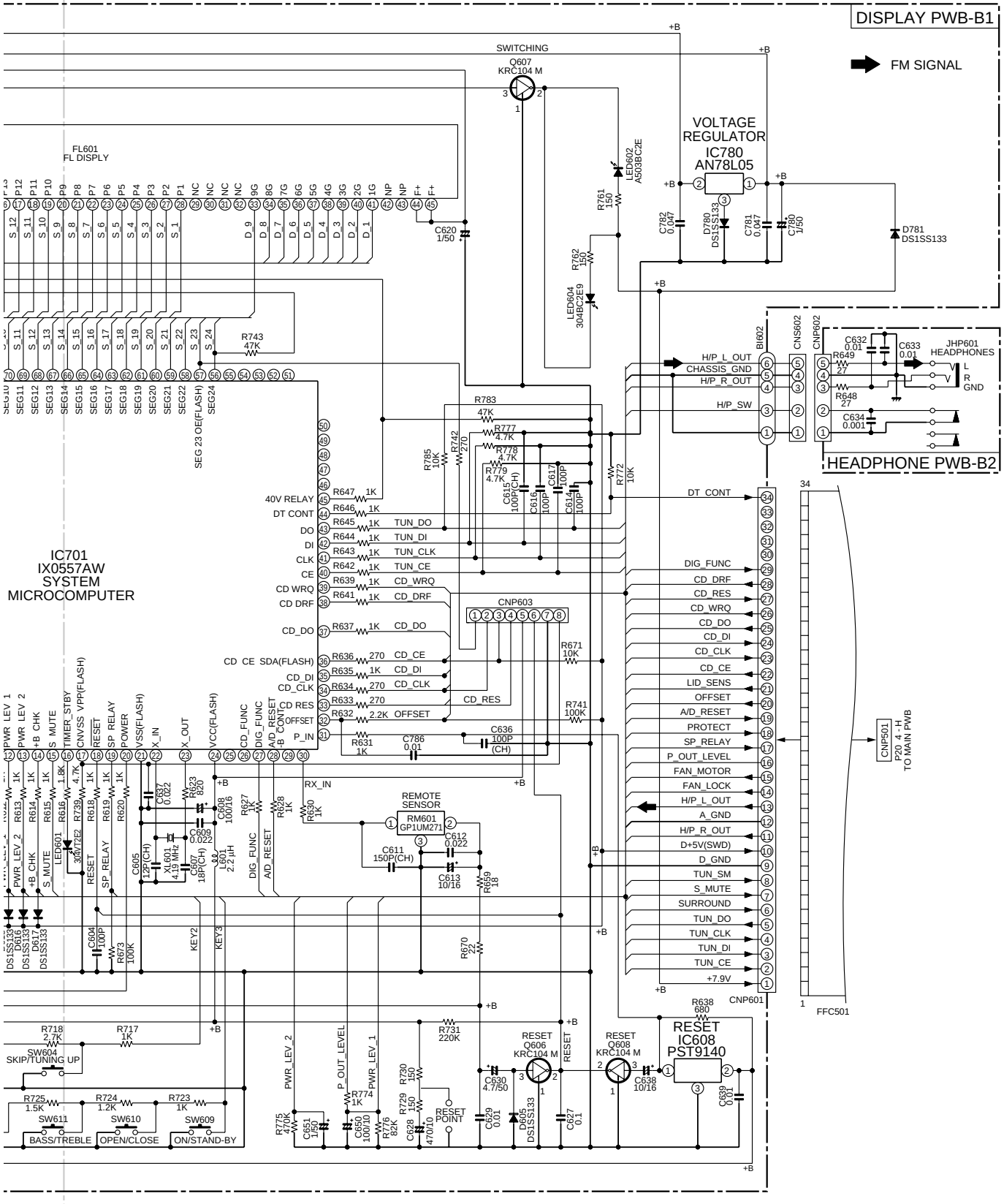
7	8	9	10	11	12

Figure 21 SCHEMATIC DIAGRAM (4/10)



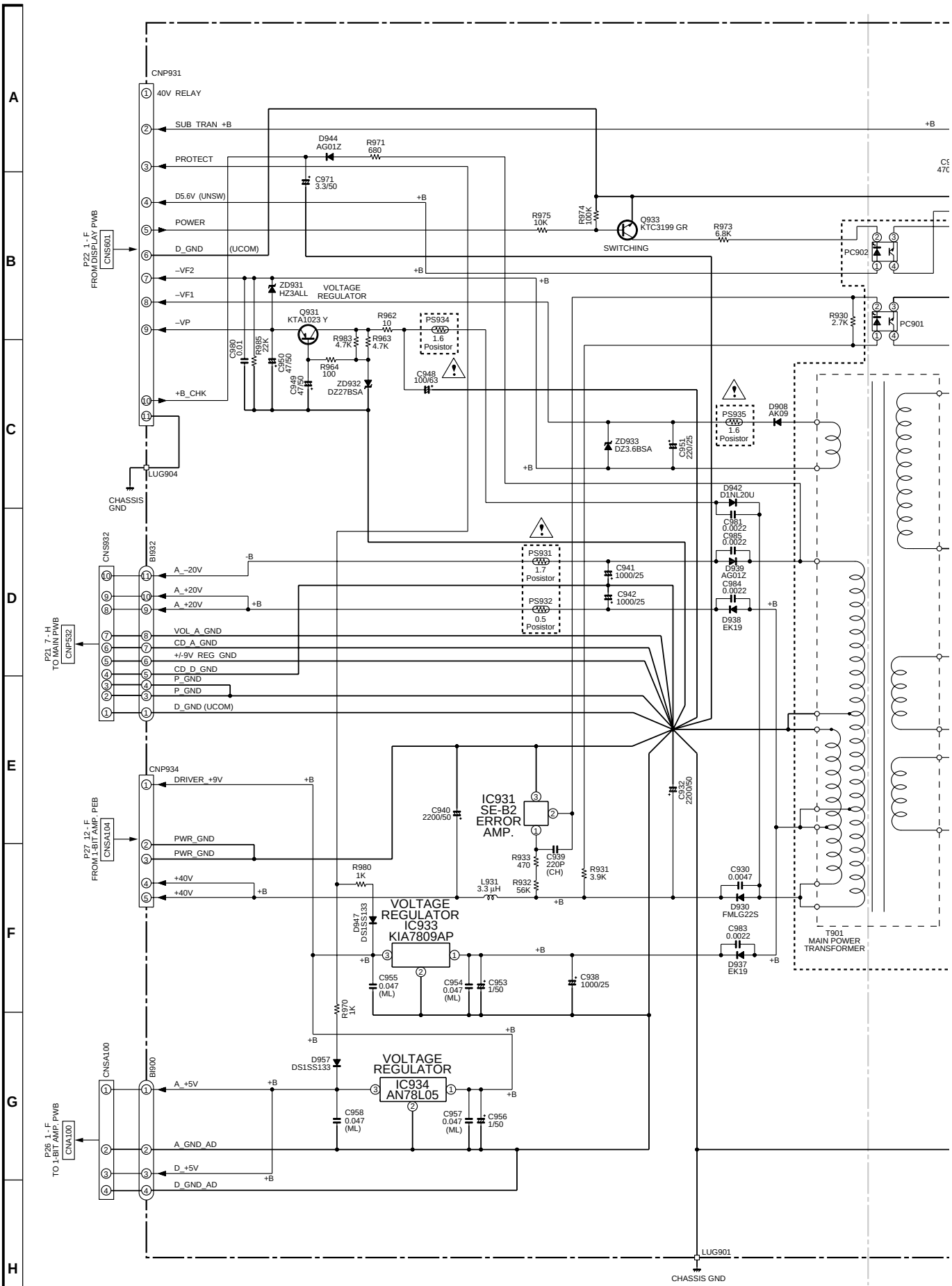
• NOTES ON SCHEMATIC DIAGRAM can be found on page 11.

Figure 22 SCHEMATIC DIAGRAM (5/10)



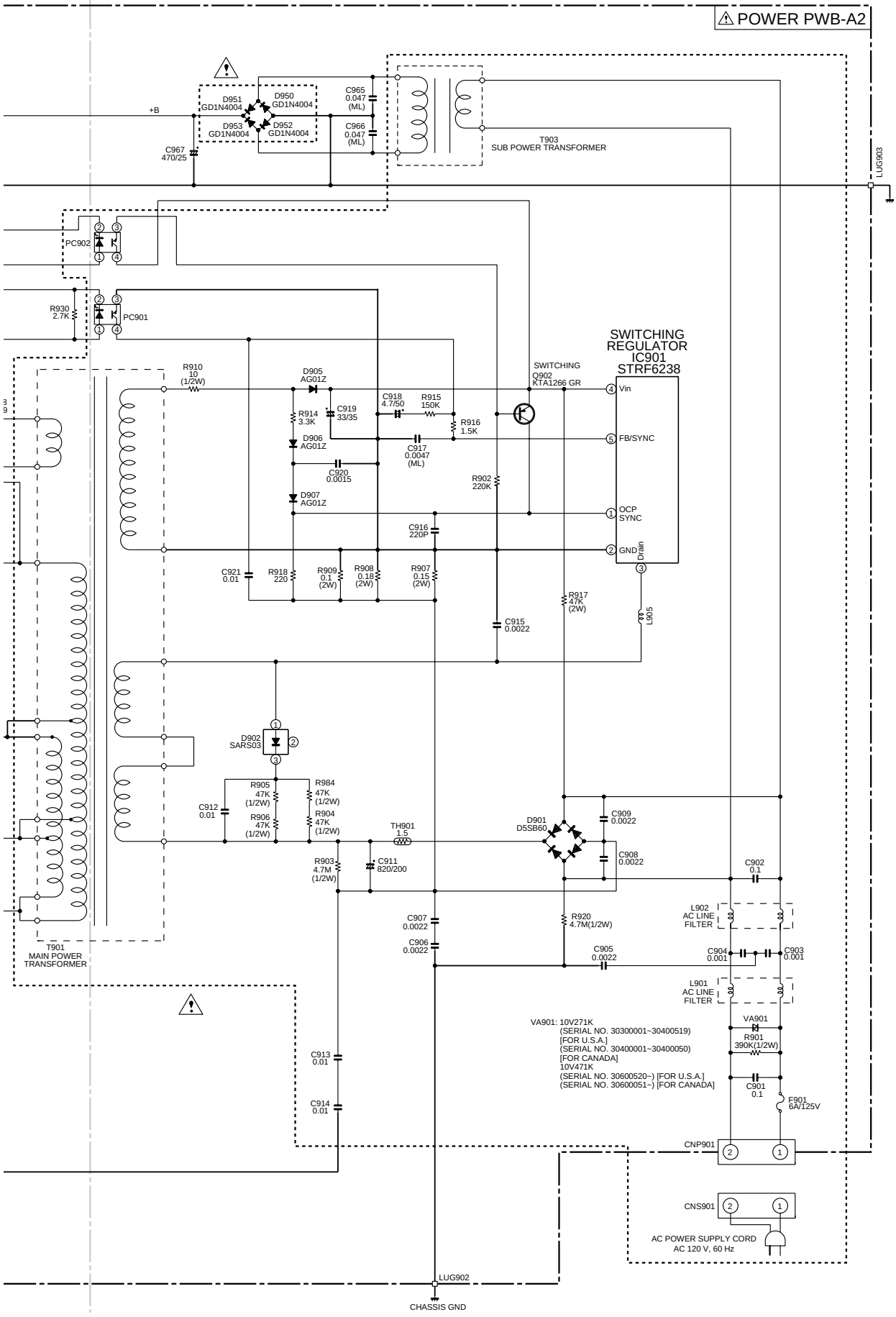
7	8	9	10	11	12

Figure 23 SCHEMATIC DIAGRAM (6/10)



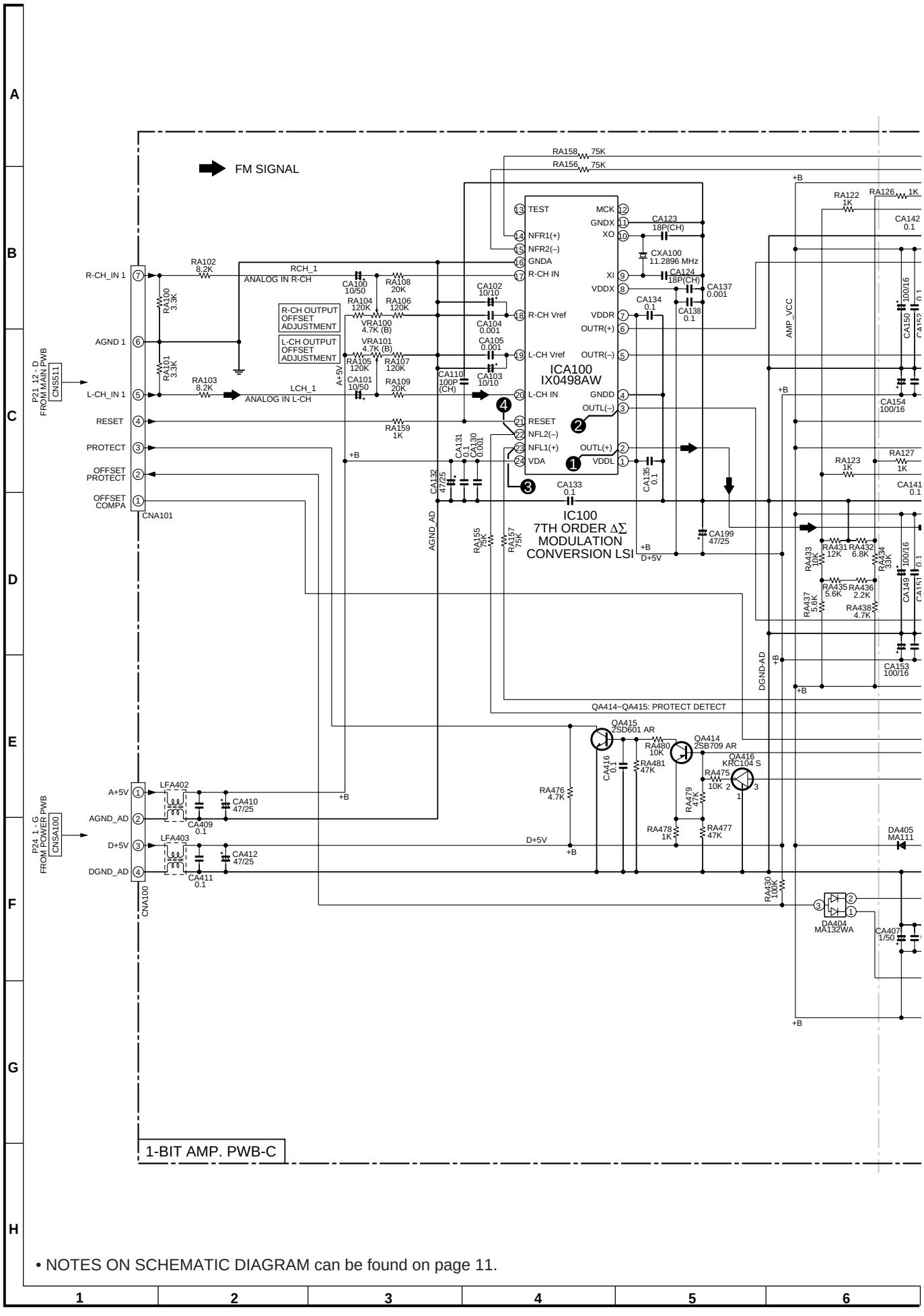
• NOTES ON SCHEMATIC DIAGRAM can be found on page 11.

Figure 24 SCHEMATIC DIAGRAM (7/10)



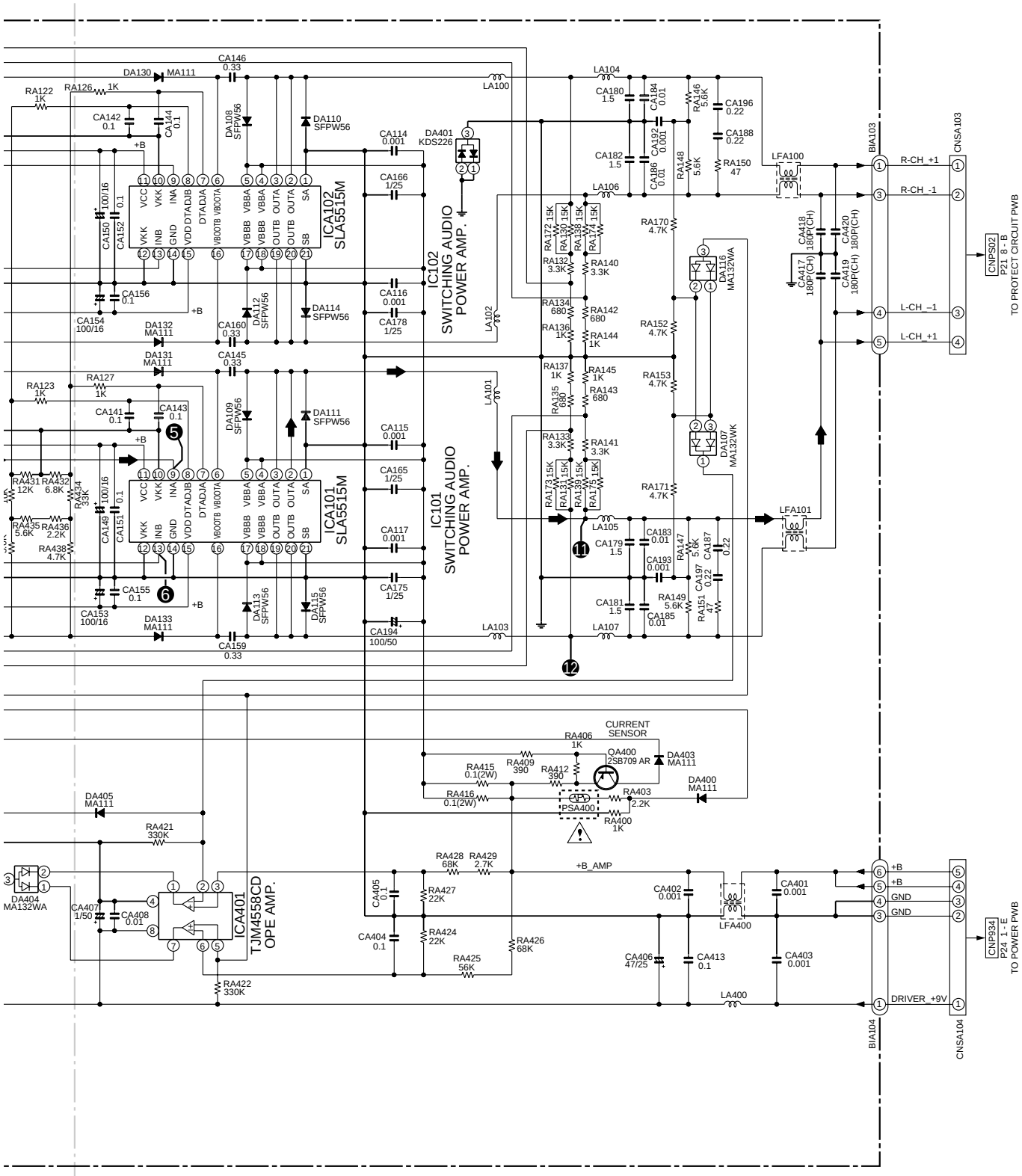
7	8	9	10	11	12

Figure 25 SCHEMATIC DIAGRAM (8/10)



• NOTES ON SCHEMATIC DIAGRAM can be found on page 11.

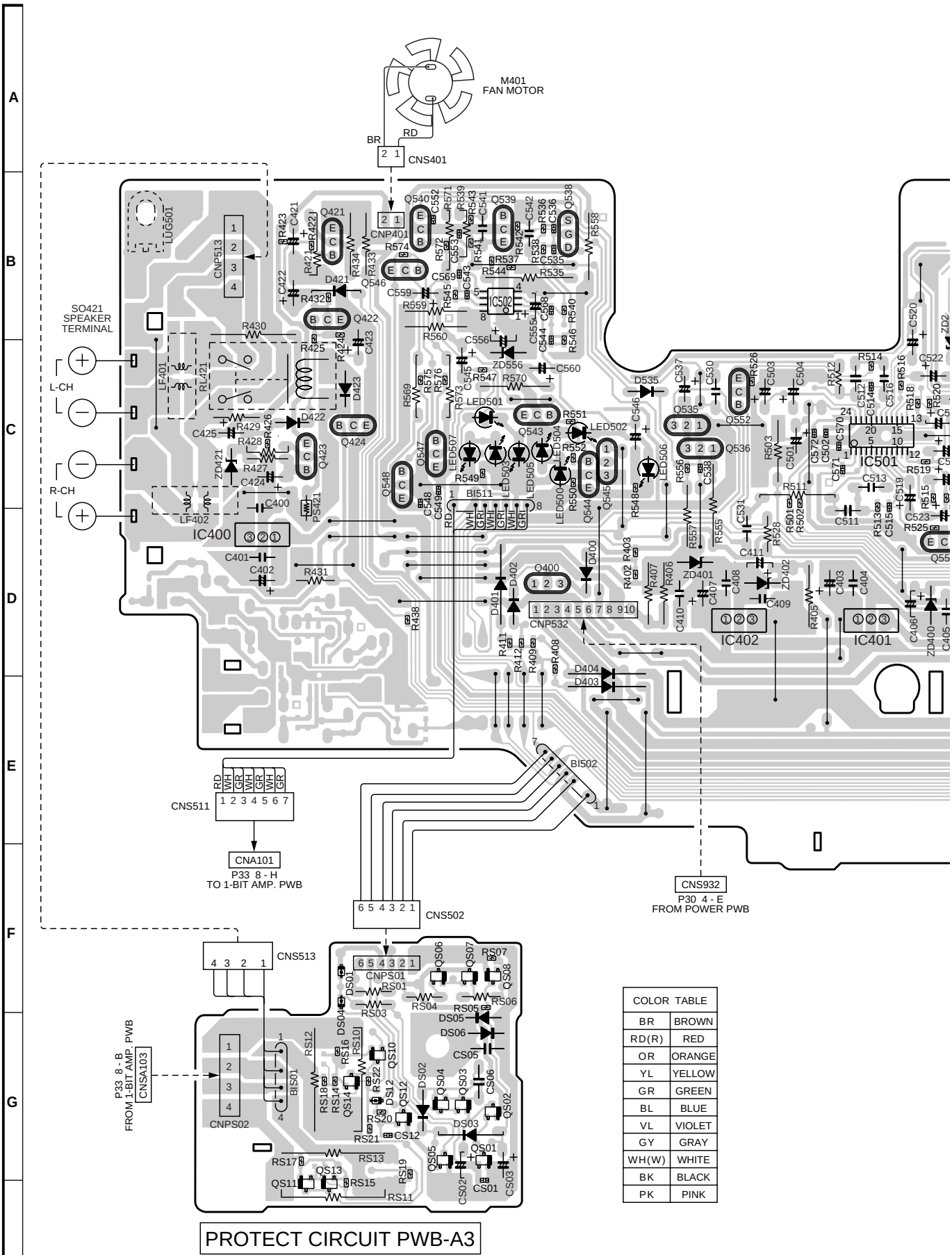
Figure 26 SCHEMATIC DIAGRAM (9/10)



• The numbers ❶ to ❻, ⓫, ⓬ are waveform numbers shown in page 37.

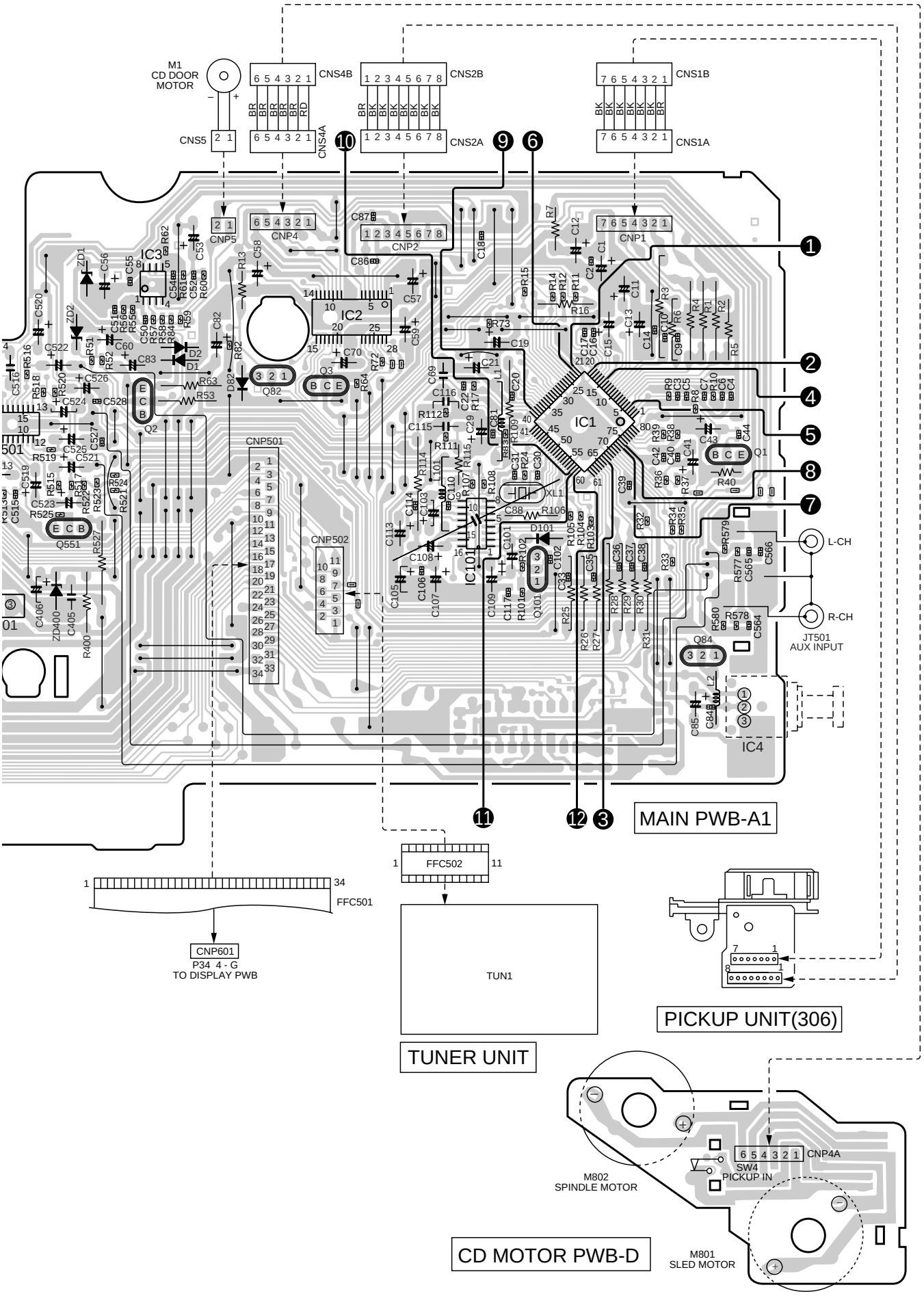
7	8	9	10	11	12

Figure 27 SCHEMATIC DIAGRAM (10/10)



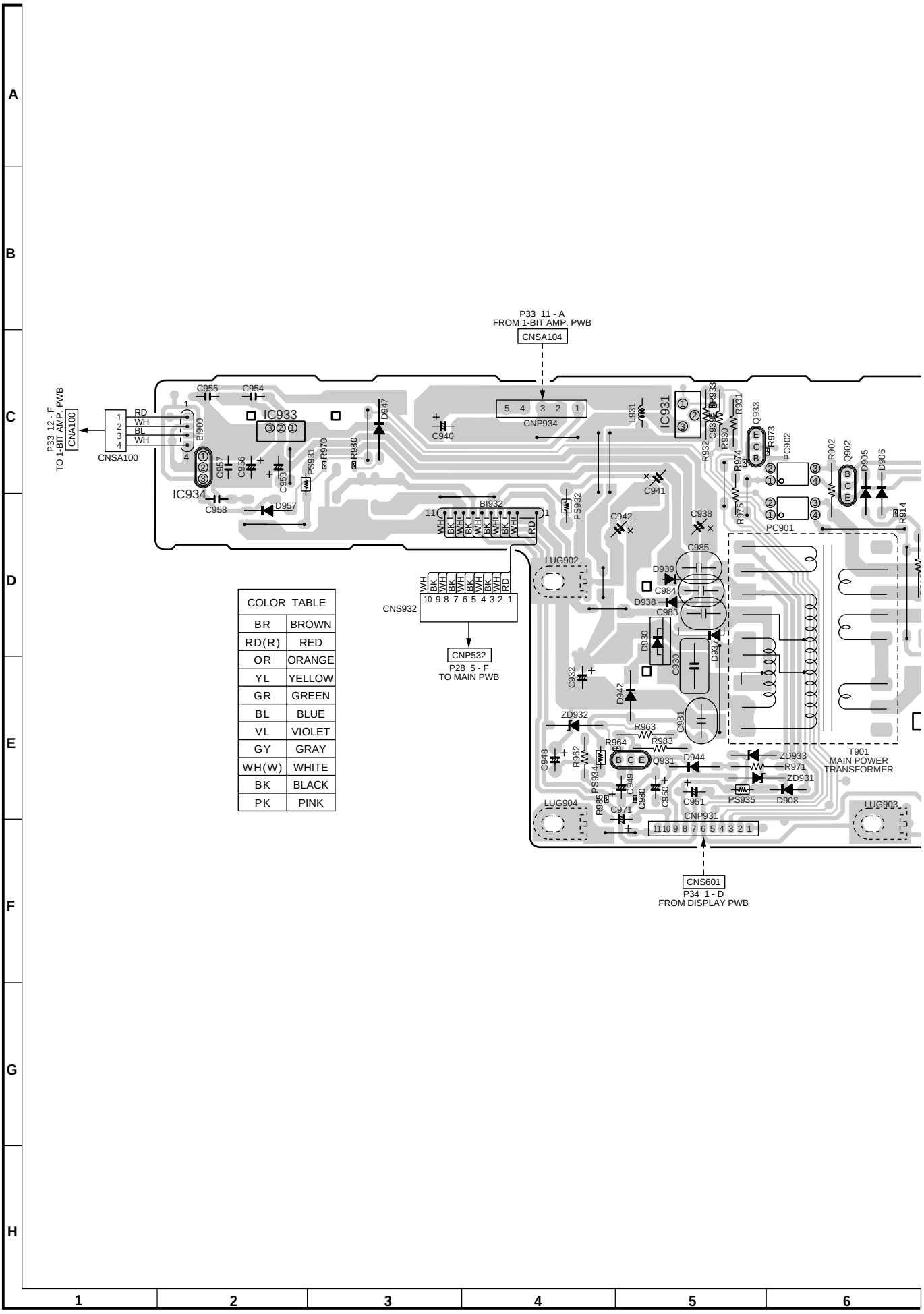
• The numbers ❶ to ⓬ are waveform numbers shown in page 36.

Figure 28 WIRING SIDE OF P.W.BOARD (1/7)



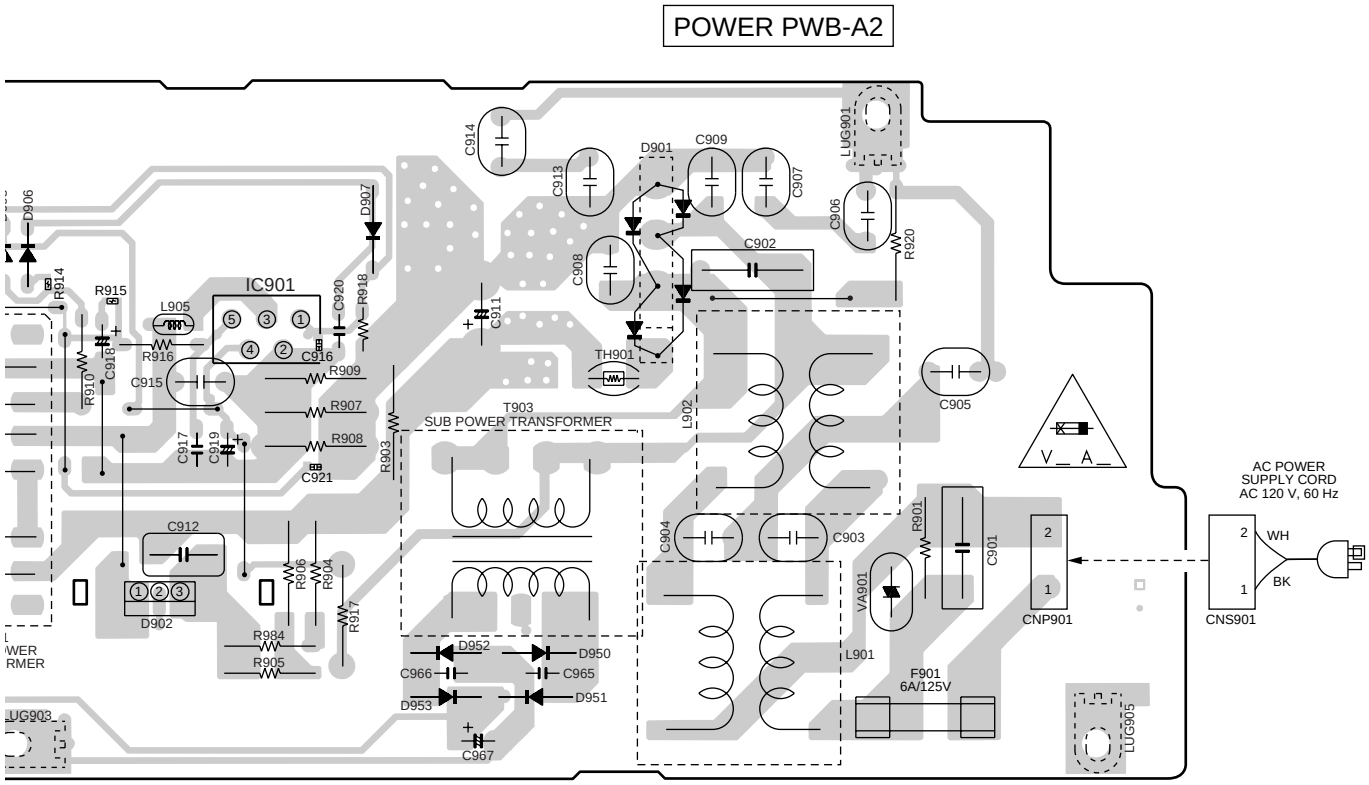
7	8	9	10	11	12

Figure 29 WIRING SIDE OF P.W.BOARD (2/7)



COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

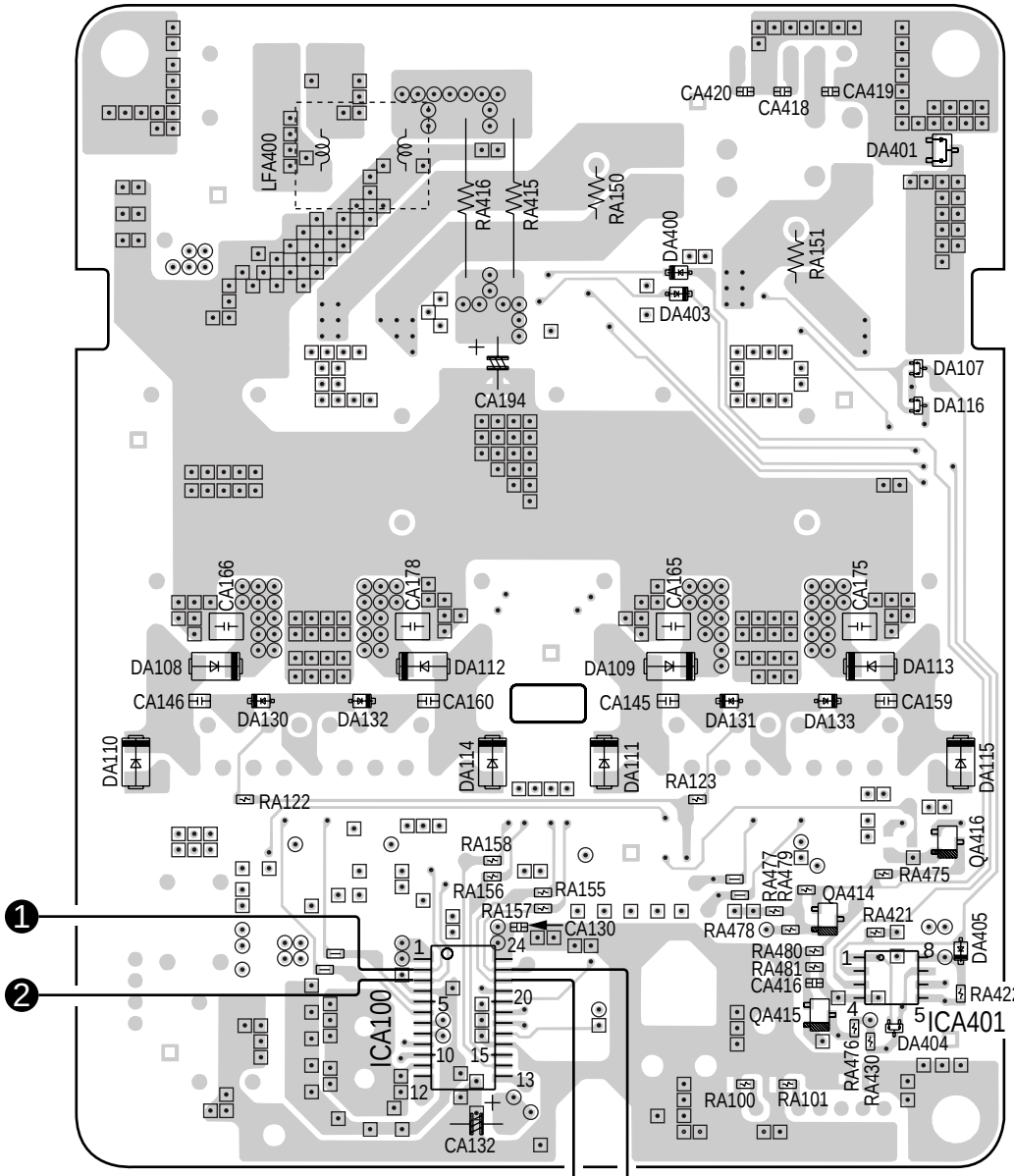
Figure 30 WIRING SIDE OF P.W.BOARD (3/7)



7	8	9	10	11	12

Figure 31 WIRING SIDE OF P.W.BOARD (4/7)

COLOR TABLE	BR	RD(R)	OR	YL	GR	BL	VL	GY	WH(W)	BK	PK
	BROWN	RED	ORANGE	YELLOW	GREEN	BLUE	VIOLET	GRAY	WHITE	BLACK	PINK



1-BIT AMP. PWB-C
(TOP VIEW)

• The numbers ❶ to ❻, ⓫, ⓬ are waveform numbers shown in page 37.

Figure 32 WIRING SIDE OF P.W.BOARD (5/7)

⊙ Through-hole where the top, bottom and +B patterns are connected.
⊡ Through-hole where the top, bottom and ground patterns are connected.
• Through-hole where the top, and bottom patterns are connected.

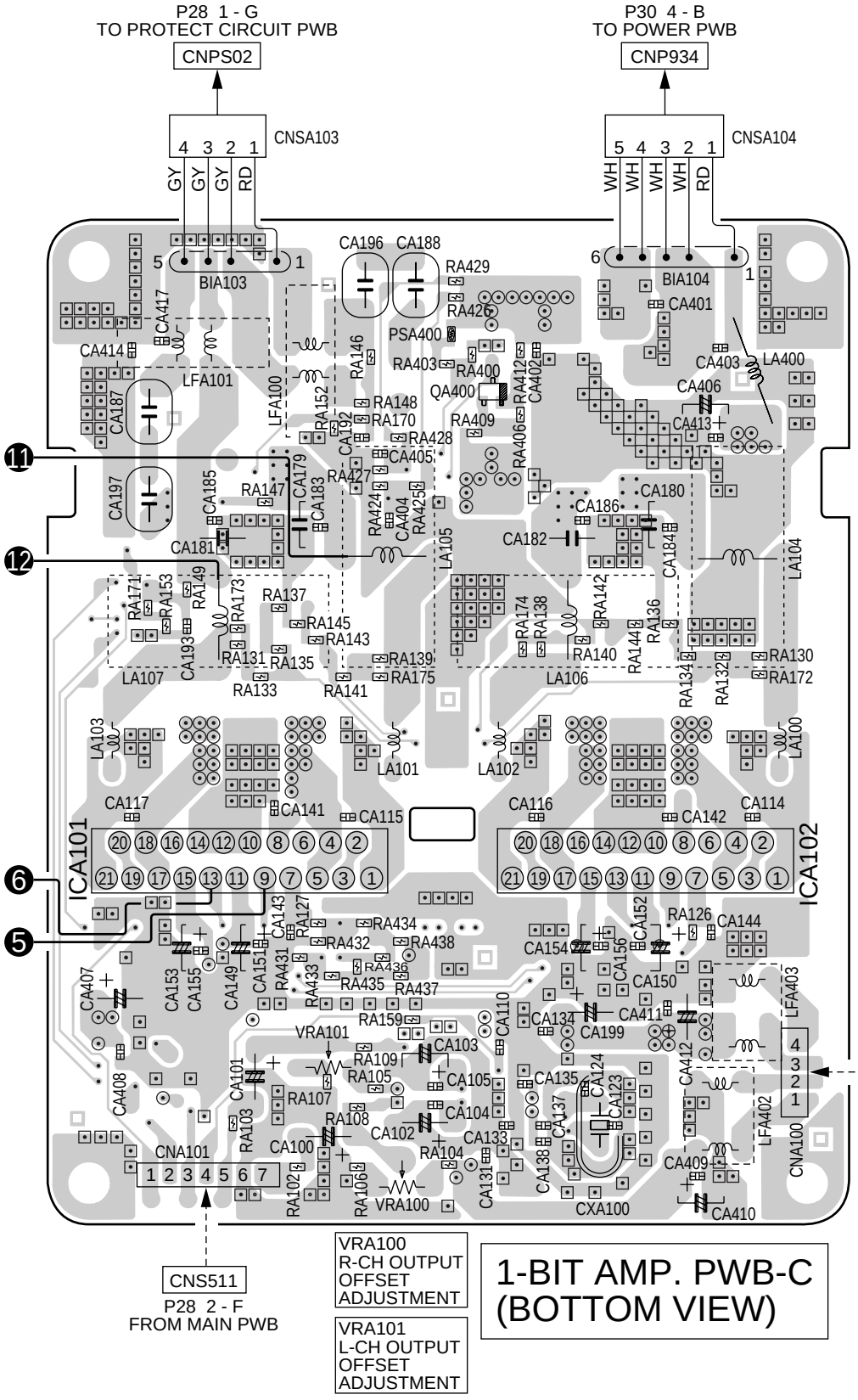


Figure 33 WIRING SIDE OF P.W.BOARD (6/7)

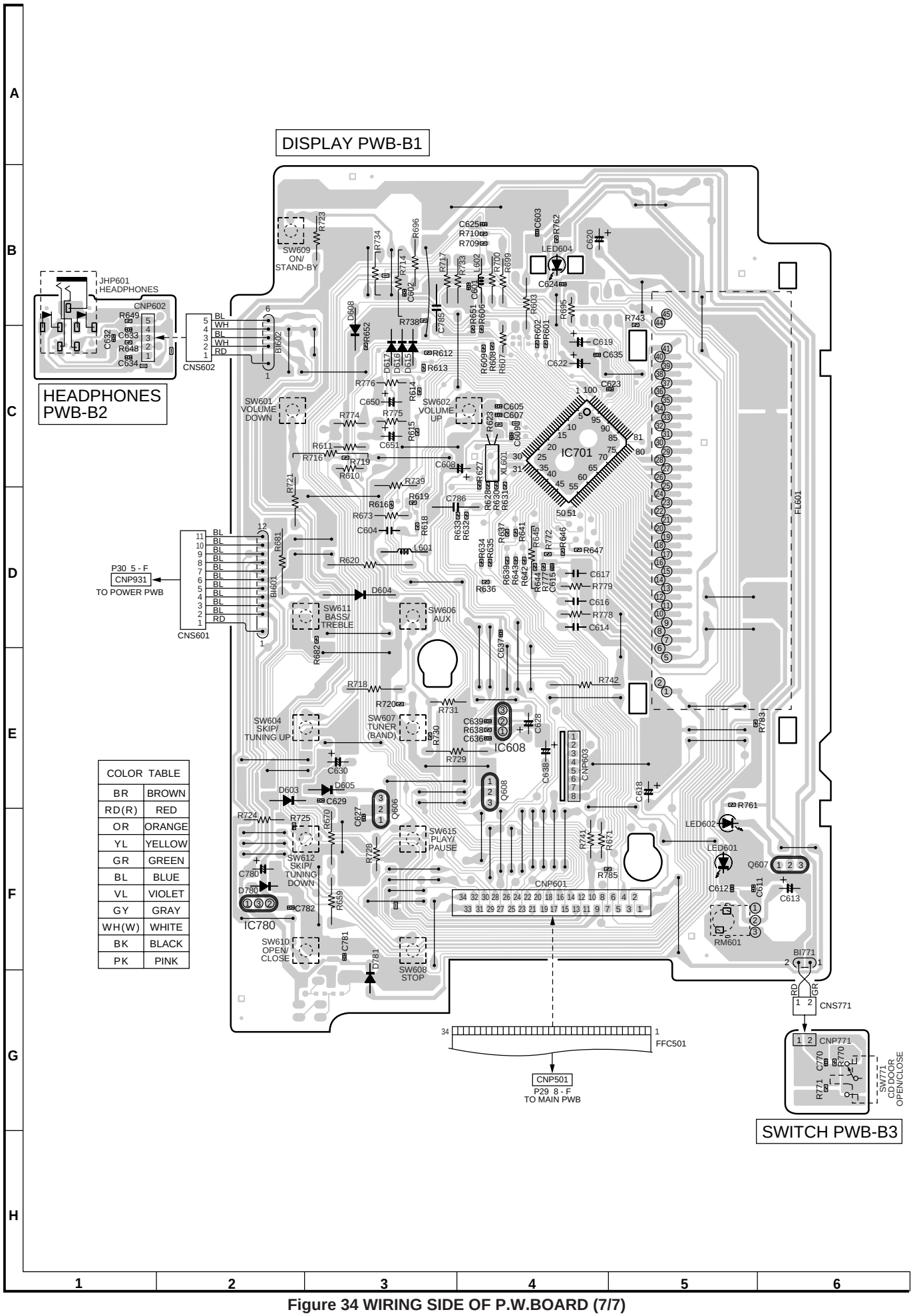


Figure 34 WIRING SIDE OF P.W.BOARD (7/7)

VOLTAGE

IC701			
PIN NO.	VOLTAGE	PIN NO.	VOLTAGE
1	5.05 V	51	0 V
2	5.05 V	52	0 V
3	0 V	53	0 V
4	0 V	54	0 V
5	0.81 V	55	0 V
6	5.09 V	56	0 V
7	2.26 V	57	25.99 V
8	2.38 V	58	-25.99 V
9	0 V	59	-25.99 V
10	0 V	60	-25.99 V
11	5.21 V	61	-25.99 V
12	0 V	62	0 V
13	0 V	63	-25.99 V
14	2.39 V	64	0 V
15	4.76V	65	0 V
16	0 V	66	-22.76 V
17	0 V	67	0 V
18	4.79 V	68	0 V
19	4.69 V	69	0.32 V
20	4.85 V	70	0 V
21	0 V	71	1.01 V
22	2.16 V	72	25.99 V
23	2.30 V	73	0 V
24	4.87 V	74	0 V
25	0 V	75	25.89 V
26	0 V	76	0 V
27	0. V	77	25.98 V
28	4.87 V	78	0 V
29	0 V	79	22.66 V
30	0 V	80	0 V
31	5.05 V	81	22.80 V
32	5.12 V	82	-22.46 V
33	4.87 V	83	-22.56 V
34	3.79 V	84	-22.50 V
35	4.24 V	85	-0.10 V
36	1.10 V	86	-22.73 V
37	4.41 V	87	-22.73 V
38	0 V	88	-22.48 V
39	4.86 V	89	25.89 V
40	0 V	90	0 V
41	0 V	91	0 V
42	0 V	92	0 V
43	5.23 V	93	0.51 V
44	0 V	94	0 V
45	4.86 V	95	0 V
46	0 V	96	4.87 V
47	0 V	97	0 V
48	0 V	98	5.05 V
49	0 V	99	0 V
50	0 V	100	5.05 V

IC780	
PIN NO.	VOLTAGE
1	2.66 V
3	0.60 V
2	10.18 V

IC608	
PIN NO.	VOLTAGE
1	5.09 V
3	5.08 V
2	0 V

Q606	
PIN NO.	VOLTAGE
E	0 V
C	4.79 V
B	0 V

Q608	
PIN NO.	VOLTAGE
E	0 V
C	4.80 V
B	0 V

Q607	
PIN NO.	VOLTAGE
E	0 V
C	0.26 V
B	4.80 V

Q82	
PIN NO.	VOLTAGE
E	1.66 V
C	1.66 V
B	5.40 V

Q3	
PIN NO.	VOLTAGE
E	7.95 V
C	3.30 V
B	7.28 V

Q101	
PIN NO.	VOLTAGE
E	0 V
C	3.28 V
B	0 V

IC1	
PIN NO.	VOLTAGE
1	1.62 V
2	1.07 V
3	1.06 V
4	0.50 V
5	3.29 V
6	15.33 V
7	1.66 V
8	1.66 V
9	1.66 V
10	1.66 V
11	1.67 V
12	1.66 V
13	0 V
14	1.23 V
15	0 V
16	0 V
17	0 V
18	3.29 V
19	0 V
20	1.65 V
21	1.65 V
22	1.65 V
23	1.65 V
24	1.65 V
25	3.84 V
26	3.29 V
27	3.30 V
28	3.76 V
29	0 V
30	3.30 V
31	0 V
32	0 V
33	0 V
34	0 V
35	0 V
36	0 V
37	0 V
38	3.29 V
39	0 V
40	0 V
41	3.85 V
42	0 V
43	0 V
44	0 V
45	0 V
46	3.85 V
47	3.30 V
48	3.39 V
49	0 V
50	0 V
51	0 V
52	0 V
53	0 V
54	3.30 V
55	0 V
56	0 V
57	0 V
58	0 V
59	0 V
60	0 V
61	3.85 V
62	0 V
63	0 V
64	0 V
65	0 V
66	3.85 V
67	3.29 V
68	3.30 V
69	0 V
70	0 V
71	0 V
72	0 V
73	0 V
74	3.30 V
75	0 V
76	0 V
77	0 V
78	0 V
79	0 V
80	0 V

IC2	
PIN NO.	VOLTAGE
1	7.87 V
2	0 V
3	0 V
4	3.57 V
5	3.60 V
6	3.55 V
7	3.62 V
8	3.55 V
9	3.63 V
10	3.54 V
11	3.54 V
12	7.89 V
13	1.66 V
14	1.66 V
15	1.67 V
16	1.67 V
17	1.65 V
18	1.67 V
19	7.20 V
20	0 V
21	1.67 V
22	7.87 V
23	1.67 V
24	1.67 V
25	3.88 V
26	0 V
27	4.78 V
28	4.78 V

IC3	
PIN NO.	VOLTAGE
1	2.25 V
2	0.25 V
3	0.25 V
4	0 V
5	2.26 V
6	2.26 V
7	2.26 V
8	6.21 V

IC101	
PIN NO.	VOLTAGE
1	3.28 V
2	0 V
3	0 V
4	0 V
5	3.30 V
6	3.30 V
7	3.30 V
8	0 V
9	0 V
10	1.78 V
11	0 V
12	0 V
13	0 V
14	0 V
15	0 V
16	3.64 V

Q1	
PIN NO.	VOLTAGE
E	3.30 V
C	0 V
B	3.28 V

Q84	
PIN NO.	VOLTAGE
E	2.90 V
C	3.21 V
B	7.25 V

Q2	
PIN NO.	VOLTAGE
E	4.89 V
C	5.56 V
B	7.46 V

IC501	
PIN NO.	VOLTAGE
1	0 V
2	0 V
3	0 V
4	0 V
5	4.52 V
6	4.57 V
7	4.50 V
8	4.50 V
9	4.50 V
10	4.50 V
11	4.50 V
12	4.50 V
13	4.50 V
14	4.50 V
15	4.50 V
16	4.50 V
17	4.52 V
18	4.50 V
19	4.50 V
20	4.52 V
21	4.52 V
22	4.52 V
23	9 V
24	0 V

IC502	
PIN NO.	VOLTAGE
1	-14.90 V
2	0 V
3	0 V
4	0 V
5	14.86 V
6	0 V
7	0 V
8	0 V

IC401	
PIN NO.	VOLTAGE
1	19.02 V
2	0 V
3	8.94 V

IC402	
PIN NO.	VOLTAGE
1	19.02 V
2	0 V
3	7.95 V

Q536	
PIN NO.	VOLTAGE
E	8.95 V
C	5.87 V
B	8.91 V

Q538	
PIN NO.	VOLTAGE
E	0 V
C	5.64 V
B	0 V

Q539	
PIN NO.	VOLTAGE
E	0 V
C	0 V
B	0.65 V

Q400	
PIN NO.	VOLTAGE
E	0 V
C	5.02 V
B	0 V

Q545	
PIN NO.	VOLTAGE
E	2.29 V
C	2.26 V
B	0 V

Q547	
PIN NO.	VOLTAGE
E	0 V
C	0 V
B	0.69 V

Q548	
PIN NO.	VOLTAGE
E	0 V
C	0 V
B	0.69 V

Q535	
PIN NO.	VOLTAGE
E	0 V
C	5.35 V
B	0 V

Q546	
PIN NO.	VOLTAGE
E	2.29 V
C	2.25 V
B	1.65 V

Q421	
PIN NO.	VOLTAGE
E	0 V
C	0 V
B	6.11 V

Q540	
PIN NO.	VOLTAGE
E	0 V
C	0 V
B	0.66 V

IC400	
PIN NO.	VOLTAGE
1	19.03 V
2	0 V
3	11.90 V

Q424	
PIN NO.	VOLTAGE
E	0 V
C	11.90 V
B	0 V

Q422	
PIN NO.	VOLTAGE
E	0 V
C	6.11 V
B	0 V

Q423	
PIN NO.	VOLTAGE
E	6.12 V
C	11.90 V
B	0 V

IC934	
PIN NO.	VOLTAGE
1	9.00 V
2	0 V
3	5.09 V

IC934	
PIN NO.	VOLTAGE
1	20.20 V
2	0 V
3	9.00 V

IC931	
PIN NO.	VOLTAGE
1	6.92 V
2	35.10 V
3	0 V

Q931	
PIN NO.	VOLTAGE
E	-26.30 V
C	-54.90 V
B	-26.60 V

Q933	
PIN NO.	VOLTAGE
E	0 V
C	0.55 V
B	0 V

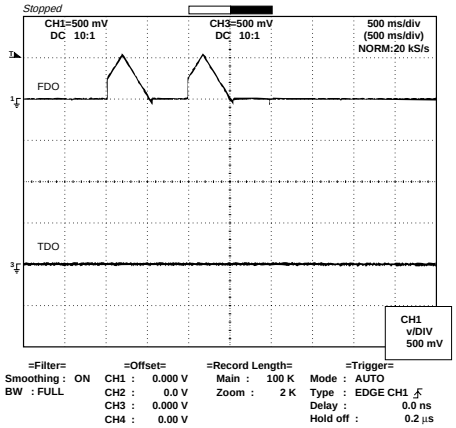
PC901	
PIN NO.	VOLTAGE
1	36.10 V
2	35.10 V
3	0 V
4	0 V

PC902	
PIN NO.	VOLTAGE
1	0 V
2	0.68 V
3	0 V
4	0 V

WAVEFORMS OF CD CIRCUIT

1 IC1 (21)

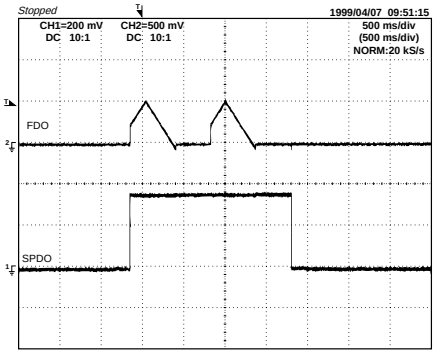
2 IC1 (20)



=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.000 V	Main :	100 K	Mode :	AUTO
BW : FULL	CH2 :	0.0 V	Zoom :	2 K	Type :	EDGE CH1
	CH3 :	0.000 V			Delay :	0.0 ns
	CH4 :	0.00 V			Hold off :	0.2 µs

1 IC1 (21)

6 IC1 (22)

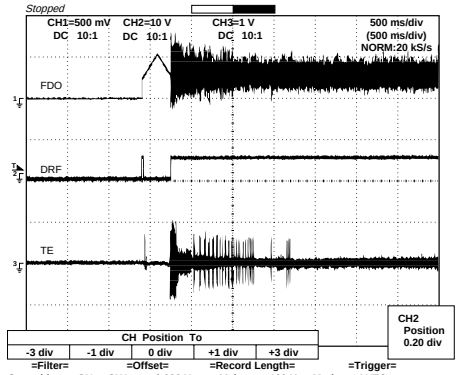


=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.000 V	Main :	100 K	Mode :	NORMAL
BW : FULL	CH2 :	0.000 V	Zoom :	2 K	Type :	EDGE CH2
	CH3 :	0.00 V			Delay :	2.924 ms
	CH4 :	0.00 V			Hold off :	0.2 µs

1 IC1 (21)

3 IC1 (67)

4 IC1 (15)

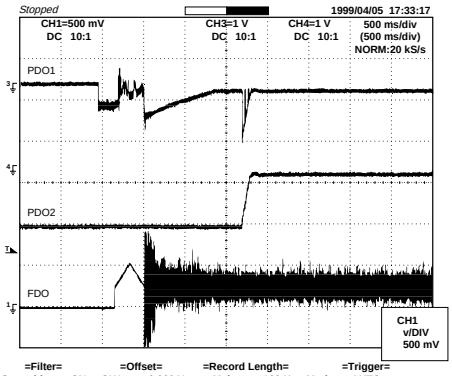


=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.000 V	Main :	100 K	Mode :	AUTO
BW : FULL	CH2 :	0.0 V	Zoom :	2 K	Type :	EDGE CH1
	CH3 :	0.00 V			Delay :	0.0 ns
	CH4 :	0.00 V			Hold off :	0.2 µs

7 IC1 (73)

8 IC1 (74)

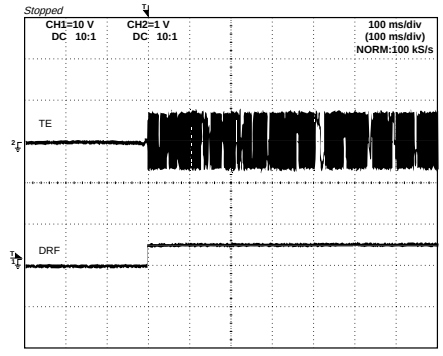
1 IC1 (21)



=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.000 V	Main :	100 K	Mode :	AUTO
BW : FULL	CH2 :	0.0 V	Zoom :	2 K	Type :	EDGE CH2
	CH3 :	0.00 V			Delay :	0.0 ns
	CH4 :	0.00 V			Hold off :	0.2 µs

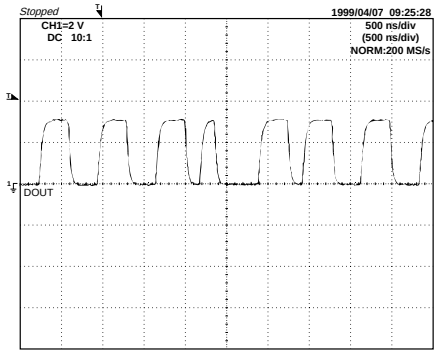
4 IC1 (15)

3 IC1 (67)



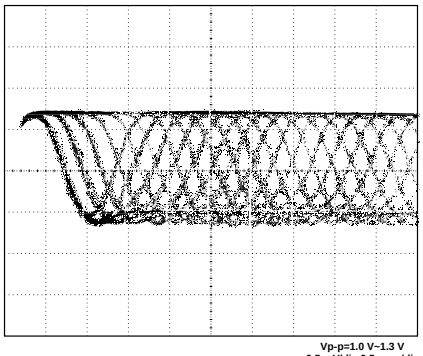
=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.0 V	Main :	100 K	Mode :	NORMAL
BW : FULL	CH2 :	0.00 V	Zoom :	2 K	Type :	EDGE CH1
	CH3 :	0.00 V			Delay :	2.924 ms
	CH4 :	0.00 V			Hold off :	0.2 µs

9 IC1 (39)



=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.00 V	Main :	1 K	Mode :	NORMAL
BW : FULL	CH2 :	0.00 V	Zoom :	100	Type :	EDGE CH1
	CH3 :	0.00 V			Delay :	2.887 ms
	CH4 :	0.00 V			Hold off :	0.2 µs

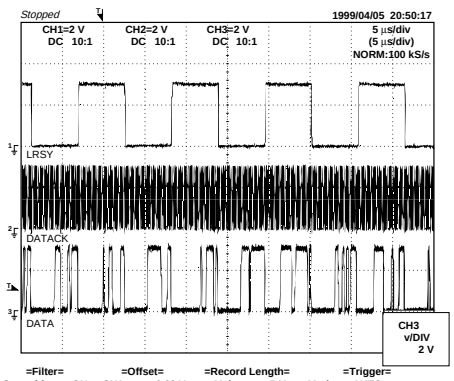
5 IC1 (4)



10 IC1 (58)

11 IC1 (59)

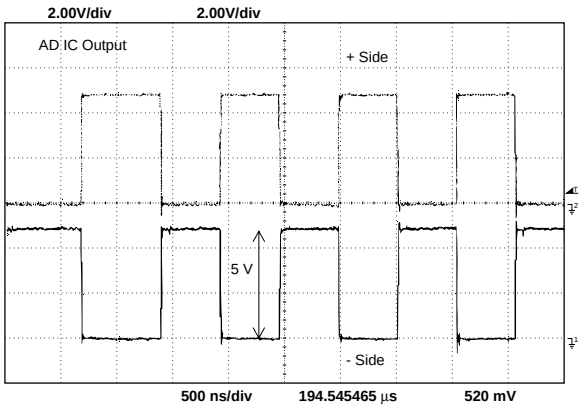
12 IC1 (60)



=Filter=	=Offset=		=Record Length=		=Trigger=	
Smoothing : ON	CH1 :	0.00 V	Main :	5 K	Mode :	AUTO
BW : FULL	CH2 :	0.00 V	Zoom :	100	Type :	EDGE CH3
	CH3 :	0.00 V			Delay :	0.0 ns
	CH4 :	0.00 V			Hold off :	0.2 µs

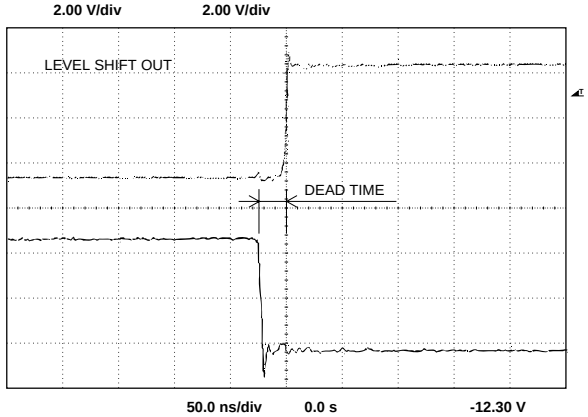
WAVEFORMS OF 1-BIT CIRCUIT

1
2



Amplitude
from 0 to 5 V

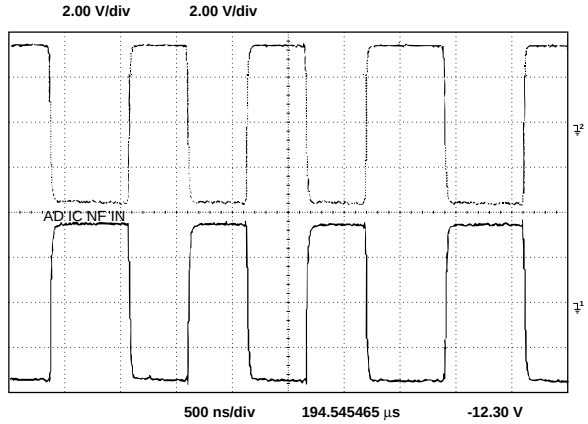
5
6



ZOOM UP

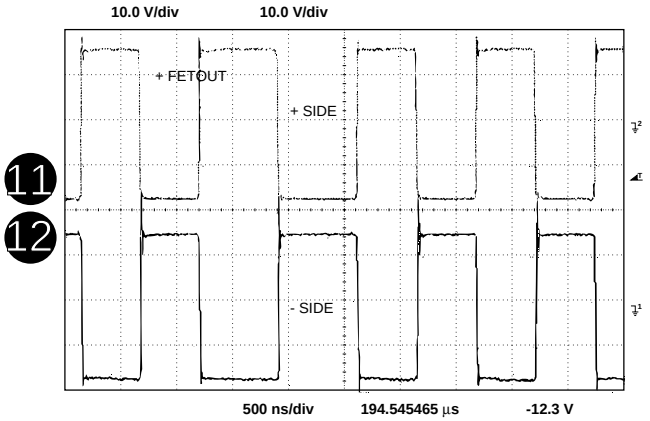
Dead time is generated by level shift input.
Leading edge is delayed at CR, passing R at DI.
Set value: 20 - 25 nsec.

3
4



In partial pressure OUT, 4 to 7 V amplitude of GND reference is observed.
In IC of 75 kohms, the reference is 2.5 V because of VREF. Due to imaginary GND of operational amplifier inside IC, the waveform cannot be monitored.
This waveform is partial pressure OUT.

11
12



Waveforms before low-pass filters at both ends of the speaker.
H-bridge may be considered as BTL.
However, here and at the gate drive, dead time is not observed; since bootstrap operates based on output, DEAD TIME part is in floating condition. The waveform on the HIGH side shows that only the booted voltage lowers.

TROUBLESHOOTING

When the CD does not function

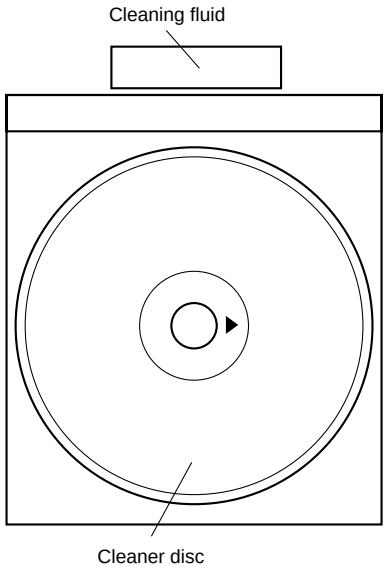
When the CD section does not operate when the objective lens of the optical pickup is dirty, this section may not operate. Clean the objective lens, and check the playback operation. When this section does not operate even after the above step is taken, check the following items.
Remove the cabinet and follow the trouble shooting instructions.
"Track skipping and/or no TOC (Table Of Contents) may be caused by build up of dust other foreign matter on the laser pickup lens. Before attempting any adjustment make certain that the lens is clean. If not, clean it as mentioned below."

Turn the power off.
Gently clean the lens with a lens cleaning tissue and a small amount of isopropyl alcohol.
Do not touch the lens with the bare hand.

		Parts code
1.	CD optical pickup Lens cleaner disc	UDSKA0004AFZZ

HOW TO USE

1. Using the brush in the cleaner cap, apply 1 or 2 drops of the cleaning fluid to the brush on the CD cleaner disc which has the mark next to it.
2. Place the CD cleaner disc onto the CD disc tray with the brush side down, then press the play button.
3. You will hear music for about 20 seconds and the CD player will automatically stop. If it continuous to turn, press the stop button.



CAUTION

- The CD lens cleaner should be effective for 30-50 operations, however if the brushes become worn out earlier then please the cleaner disc.
- If the CD cleaner brushes become very wet then wipe off any excess fluid with a soft cloth.
- Do not drink the cleaner fluid or allow it to come in contact with the eyes. In the event of this happening then drink and / or rinse with clean water and seek medical advice.
- The CD cleaner disc must not be used on car CD players or on computer CD-ROM drives.
- All rights reserved. Unauthorized duplicating, broadcasting and renting this product is prohibited by law.

When a CD cannot be played

1. "E-CD01" is displayed.

(1) Check the power to IC1 (LC78646E), the presence of the clock signal (16.9344 MHz) and the status of the RESET terminal (pin 66 on IC1).
(2) Does the pickup move to the PICKUP-IN Switch (SW4) position?

If (1) and (2) are OK, check the system microcomputer (especially the communication line with the DSP).

2. Pressing the CD operation key is accepted, but playback does not occur.

(1) Focus-HF system check
(2) Tracking system check
(3) Spin system check
(4) PLL system check
(5) Others

(1) Focus-HF system check.

Although a CD is inserted and the cover is closed, "NO DISC" is displayed.

Press the OPEN/CLOSE switch (SW771) without inserting a disc, and try starting the playback operation.

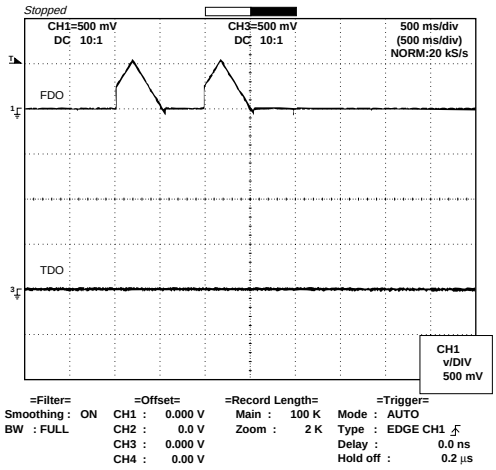


Figure 39-1

1. Does the pickup move to the PICKUP-IN Switch (SW4) position ?
   - No → Sled motor (M801).
   - Yes ↓
2. Does the focus (lens) move up and down ? (Waveform drawing Figure 39-1)
   - No → Check the focus peripheral circuit.
   - Yes ↓
3. Is the laser lit ?
   - No → Check the laser diode driver Q1 peripheral circuit.
   - Yes ↓
4. Is the turntable rotating ?
   - No → Spindle motor (M802).

When a disc is loaded, start playback operation.

1. Is focus servo activated ? (Waveform drawing Figure 39-2)
   - No → Pins 7~11, 79 and 80 on IC1
     Check the laser diode driver Q1 peripheral circuit.
   - Yes ↓
2. Does DRF change from "L" to "H" ?
   - No → Is the disc rotating ?
     - No → Check the spin system.
     - Yes → If the disc is spinning and a HF waveform is generated, DRF will go H.
   - Yes ↓
3. Is the HF waveform normal ? (Waveform drawing Figure 39-3)
   - No → If the level is not normal.

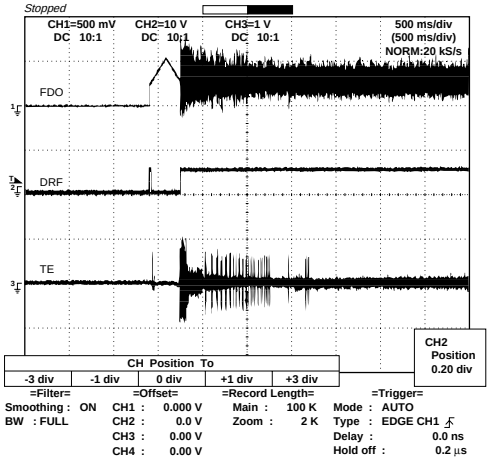


Figure 39-2

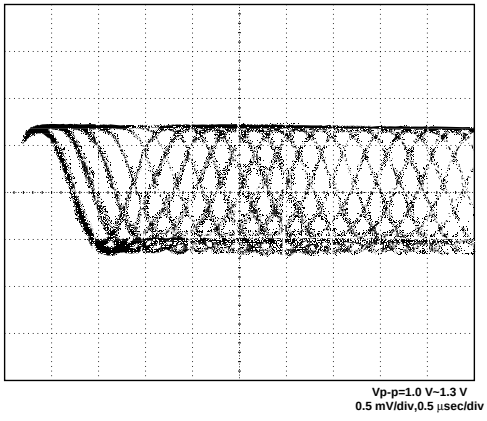


Figure 39-3

(2) Tracking system check.

Check the TE waveform at pin 15 on IC1.

If the waveform shown in Figure 40-1 appears and soon after NO DISC appears ?

Yes → The tracking servo is not activated.
Check the peripheral circuits at pins 14, 15 and 20 on IC1, and CNS1A/B.

No ↓

"Initialization" is possible, but play is not possible ?

Yes → A normal jump operation cannot be completed or the beginning of the track cannot be found.
Check the around pin 20 on IC1.

No ↓

"Initialization" is not possible. → Data cannot be read. Check the VCO-PLL system.

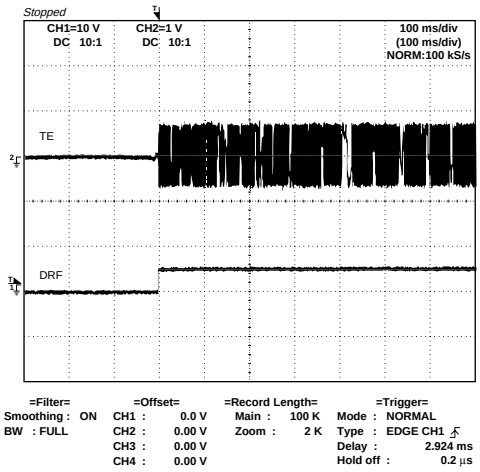


Figure 40-1

(3) Spin system check.

Press the OPEN/CLOSE switch without inserting a disc, and then try starting the play operation.

1. The turntable rotates a little ?
(Waveform drawing Figure 40-2)

Yes → The spin driver circuit is OK.

No ↓

2. The turntable doesn't rotate. → Check around pin 22 on IC1, pins 15 and 16 on IC2, and CNS3A/B.

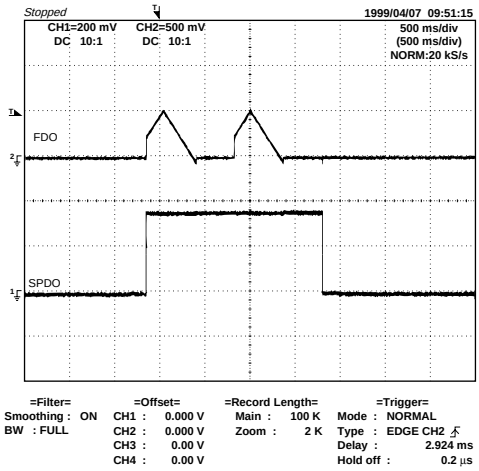


Figure 40-2

(4) PLL system check.

When a disc is loaded, start play operation.

↓

The HF waveform is normal, but the TOC data cannot be read.

↓

Check the PDO waveform. (Figure 41-1)

↓

Check around pins 73~78 on IC1.

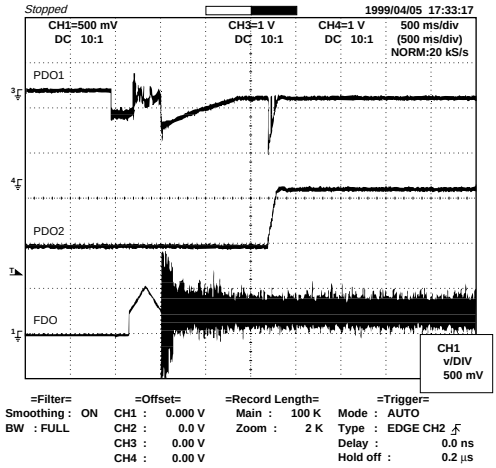


Figure 41-1

(5) Others.

The HF waveform is normal and the time is displayed normally, but no sound is produced. Or the sound has dropouts.

Is pin 52 (C2F) on IC1 "L" ? — No → There are too many error flags on a damaged disc which makes error correction impossible.

↓ Yes

1. When playing at normal speed
   Check the peripheral circuit at pin 39 (DOUT) on IC1 and the waveform (Figure 41-2).

↓

If OK, Check the unit.

↓

Check again using a known good disc.

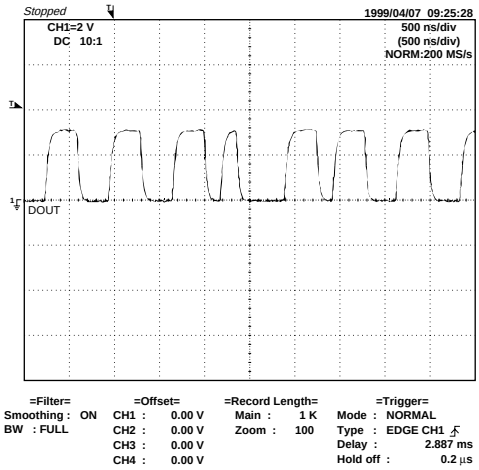


Figure 41-2

FUNCTION TABLE OF IC

IC1 VHiLC78646E-1: CD Servo (LC78646E) (1/2)

Pin No.	Terminal Name	Input/Output	Setting in Reset	Function	
1	SLCO	Output	—	For slice level control.	Control output.
2	SLCIST	Input	—		Resistor connection terminal for SLCO output current setting.
3	EFMIN	Input	—		RF signal input terminal.
4	RF	Output	—	RF signal monitor terminal.	
5	RFVDD	Input	—	RF power terminal.	
6	RFVSS	—	—	RF earth terminal. To be connected to 0 V.	
7	FIN1	Input	—	A+C signal input terminal.	
8	FIN2	Input	—	B+D signal input terminal.	
9	TIN1	Input	—	E signal input terminal.	
10	TIN2	Input	—	F signal input terminal.	
11	VREF	Output	RFVDD/2	VREF voltage output terminal.	
12	REF1	Input	—	Reference supply setting terminal.	
13*	FE	Output	ZHI	FE signal monitor terminal.	
14	TEC	Output	—	LPF capacitor connection terminal for TE signal.	
15*	TE	Output	ZHI	TE signal monitor terminal.	
16*	RFMON	Output	ZHI	RF internal signal monitor terminal.	
17	JITTC	—	—	Capacitor connection terminal for jitter detection.	
18	ADAVDD	Input	—	Power terminal for servo A/D, D/A.	
19	ADAVSS	—	—	Earth terminal for serve A/D, D/A. To be connected to 0 V.	
20	TDO	Output	ADAVDD/2	Output terminal for tracking control. D/A output.	
21	FDO	Output	ADAVDD/2	Output terminal for focus control. D/A output.	
22	SPDO	Output	ADAVDD/2	Output terminal for spindle control. D/A output.	
23	SLDO	Output	ADAVDD/2	Output terminal for sled control. D/A output.	
24*	GPDAC	Output	ADAVDD/2	Servo D/A general-purpose output terminal.	
25	CONT4	Input/Output	Input Mode	General-purpose I/O terminal 4.	Controlled by commands from the microcomputer. When not used, set them as input terminals and connect to 0 V, or set them as output terminals and leave open.
26	CONT5	Input/Output	Input Mode	General-purpose I/O terminal 5.	
27*	SBCK/CONT6	Input/Output	Input Mode	General-purpose I/O terminal 6 or Subcode reading clock input terminal.	
28	SBCK/FG	Input	—	Subcode reading clock input terminal/FG signal input terminal/external emphasis setting terminal. Terminal functions are set by commands. When not used, connect to 0 V.	
29*	DEFECT	Output	L	Defect terminal.	
30*	V/*P	Output	H	Auto switching monitor output terminal for rough servo phase control. “H”: rough servo, “L”: phase servo.	
31*	FSEQ	Output	L	Sync signal detection output terminal. The status changes to “H” when the sync signal detected in EFM and the sync signal of internal generation are identified.	
32*	MONI1	Output	L	Internal signal monitor terminal 1.	
33*	MONI2	Output	L	Internal signal monitor terminal 2.	
34	DE_EMPH	Output	L	Internal signal monitor terminal 3.	
35*	MONI4	Output	L	Internal signal monitor terminal 4.	
36*	MONI5	Output	L	Internal signal monitor terminal 5.	
37	VSS	—	—	Digital system earth terminal. To be connected to 0 V.	
38	VDD	Input	—	Digital system power terminal.	
39	DOUT	Output	L	Digital OUT output terminal. (EIAJ format)	
40	TEST	Input	L	Input terminal for test. To be connected to 0 V.	
41	LVDD	Input	—	Left channel D/A converter	Power supply for Left channel.
42*	LCHO	Output	LVDD/2		Left channel output.
43	LVSS	—	—		GND for Left channel. Must be connected to 0 V.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

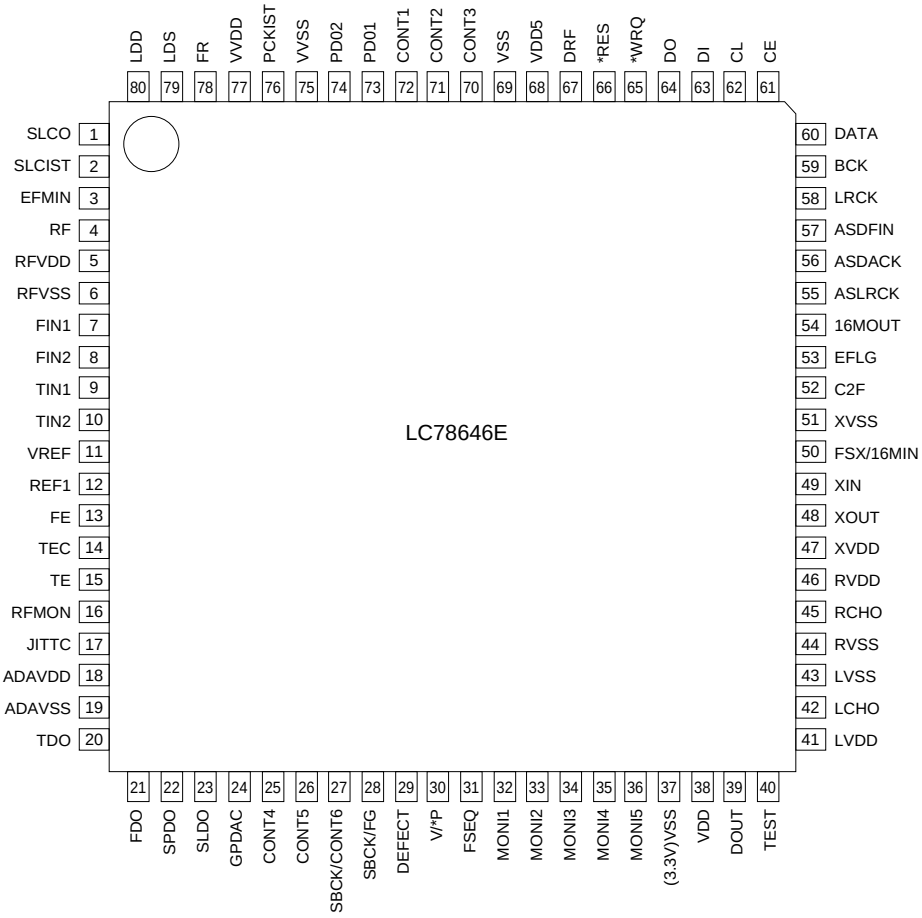
IC1 VHiLC78646E-1: CD Servo (LC78646E) (2/2)

Pin No.	Terminal Name	Input/Output	Setting in Reset	Function	
44	RVSS	—	—	Right channel D/A converter	GND for Right channel. Must be connected to 0 V.
45*	RCHO	Output	LVDD /2		Right channel output.
46	RVDD	Input	—		Power supply for Right channel.
47	XVDD	Input	—	Crystal Oscillator	Power supply for crystal oscillator.
48	XOUT	Output	—		Connected for the 33.8688 MHz crystal oscillator cement.
49	XIN	Input	—		
50	FSX/16MIN	Input/Output	Input	7.35 kHz Synchronization signal monitor port. or Clock input port for Digital filter & D/A	
51	XVSS	—	—	Crystal Oscillator	GND for crystal oscillator. Must be connected to 0 V.
52*	C2F	Output	H	C2 FLAG monitor port.	
53*	EFLG	Output	L	C1, C2 error corrected monitor port.	
54	16MOUT	Output	Clock	16.9344 MHz output port.	
55	ASLRCK	Input	—	Anti-shock	Word clock input port. (If this port does not use, must be connect to 0 V.)
56	ASDACK	Input	—		Bit clock input port. (If this port does not use, must be connect to 0 V.)
57	ASDFIN	Input	—		Left/Right channel data input port. (If this port does not use, must be connect to 0 V.)
58	LRCK	Output	L	Digital data	Word clock output port.
59	BCK	Output	L		Bit clock output port.
60	DATA	Output	L		Left/Right channel data output port.
61	CE	Input	—	Microcomputer Interface	Chip enable signal input port.
62	CL	Input	—		Data transfer clock input port.
63	DI	Input	—		Data input port.
64	DO	Output	(H)		Data output port. (N-ch. open drain output.)
65	*WRQ	Output	H		Interruption signal output.
66	*RES	Input	—	Chip reset signal input port. This port must be set LOW after first applied power on.	
67	DRF	Output	L	Focus detection output port.	
68	VDD5	Input	—	Power supply for Microprocessor.	
69	VSS	—	—	GND for digital circuit. Must be connected to 0 V.	
70	CONT3	Input/Output	Input	General purpose port 1.	Controlled with serial data command from micro-computer. When not used, General purpose input/ output terminal 7. Set it as the input terminal and open it by connecting to 0 V, or set it as the output terminal and open it.
71	CONT2	Input/Output	Input	General purpose port 2.	
72	CONT1	Input/Output	Input	General purpose port 3.	
73	PDO1	Output	—	PLL	Internal VCO control phase comparator output port 1.
74	PDO2	Output	Input		Internal VCO control phase comparator output port 2.
75	VVSS	—	—		GND for internal VCO. Must be connected to 0 V.
76	PCKIST	Input	—		PDO output current adjustment resistor connection port.
77	VVDD	Input	—		Power supply for internal VCO.
78	FR	Input	—		VCO frequency range adjustment port.
79	LDS	Input	—	LASER power detected signal input port.	
80	LDD	Output	—	LASER power control signal output port.	

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

Be sure to supply the same potential to each power terminal. (VVDD, ADAVDD, VDD, LVDD, RVDD, XVDD)
Terminal witch is controlled by the power terminal (VDD5 V) for a microcomputer interface :
CE (61 pin), CL (62 pin), DI (63 pin), DO (64 pin), WRQ (65 pin), RES (66 pin), DRF (67 pin)

IC1 VHiLC78646E-1: CD Servo (LC78646E)



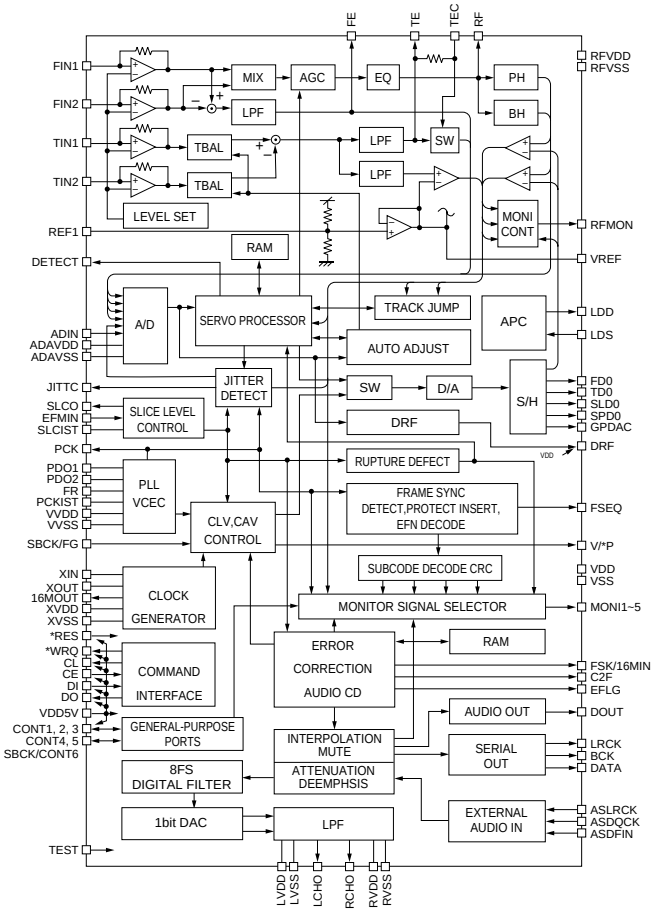


Figure 44 BLOCK DIAGRAM OF IC

IC101 VHiCS4340KS-1: DAC IC (CS4340KS) (1/2)

Pin No.	Port Name	Input/Output	Function
1	$\overline{RST}$	Input	**Reset** The device enters a low power mode and all internal state machines are reset to the default settings when low. $\overline{RST}$ should be held low during power-up until the power supply, master and left/right clocks are stable.
2	SDATA	Input	**Serial Audio Data** Two's complement MSB-first serial data is input on this pin. The data is clocked into SDATA via the serial clock and the channel is determined by the Left/Right clock. The required relationship between the Left/Right clock, serial clock and serial data is defined by the DIF1-0 pins.
3	SCLK	Input	**Serial Clock** Clocks the individual bits of the serial data into the SDATA pin. The required relationship between the Left/Right clock, serial clock and serial data is defined by the DIF1-0 pins. The CS4340 supports both internal and external serial clock generation modes. Internal SCLK mode is used to gain access to extra de-emphasis modes. **Internal Serial Clock Mode** In the internal Serial Clock Mode, the serial clock is internally derived and synchronous with the master clock and left/right clock. The SCLK/LRCK frequency ratio is either 32, 48 or 64 depending upon the DIF1-0 pins. Operation in this mode is identical to operation with an external serial clock synchronized with LRCK. **External Serial Clock Mode** The CS4340 will enter the External Serial Clock Mode whenever 16 low to high transitions are detected on the SCLK pin during any phase of the LRCK period. The device will revert to Internal Serial Clock Mode if no low to high transitions are detected on the SCLK pin for 2 consecutive periods of LRCK.
	DEM1	Input	**De-emphasis Control** Implementation of the standard 15 µs/50 µs digital de-enphasis filter response, required reconfiguration of the digital filter to maintain the proper filter response for 32, 44.1 or 48 kHz sample rates. When using Internal Serial Clock Mode, as described above, Pin 3 is available for de-emphasis control, DEM1, and all de-enphasis filters are available. When using External Serial Clock Mode, as described above, Pin 3 is not available for de-emphasis use and only the 44.1 kHz de-emphasis filter is available. **Note:** De-emphasis is not available in High-Rate Mode.

DEM1	DESCRIPTION
0	Disabled
0	44.1 kHz
1	48 kHz
1	32 kHz

Internal Serial Clock Mode

4	LRCK	Input	**Left/Right Clock** The Left/Right clock determines which channel is currently being input on the serial audio data input, SDATA. The frequency of the Left/Right clock must be at the input sample rate. Audio samples in Left/Right sample pairs will be simultaneously output from the digital- to-analog converter whereas Right/Left pairs will exhibit a one sample period difference. The required relationship between the Left/Right clock, serial clock and serial data is defined by the DIF1-0 pins.
5	MCLK	Input	**Master Clock** The master clock frequency must be either 256x, 384x or 512x the input sample rate in Base Rate Mode (BRM) and either 128x or 129x the input sample rate in High Rate Mode (HRM).

Sample Rate (kHz)	MCLK (MHz)				
	HRM		BRM		
	128x	192x	256x	384x	512x
32	4.0960	6.1440	8.1920	12.2880	16.3840
44.1	5.6448	8.4672	11.2896	16.9344	22.5792
48	6.1440	9.2160	12.2880	18.4320	24.5760
64	8.1920	12.2880	—	—	—
88.2	11.2896	16.9344	—	—	—
96	12.2880	18.4320	—	—	—

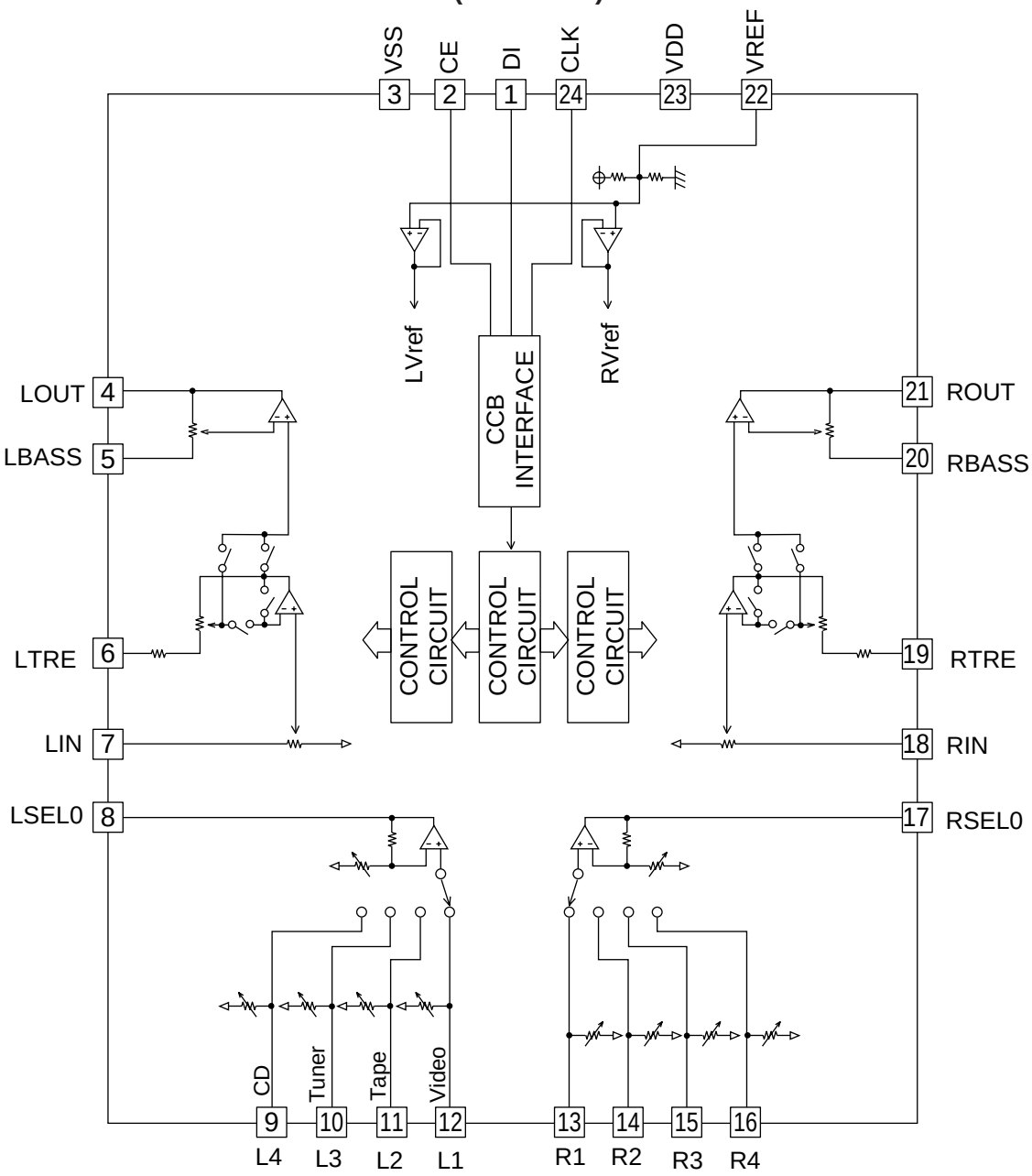
Common Master Clock Frequencies

IC101 VHiCS4340KS-1: DAC IC (CS4340KS) (2/2)

<table>
<tr><th>Pin No.</th><th>Port Name</th><th>Input/Output</th><th>Function</th></tr>
<tr><td>6, 7</td><td>DIF1, DIF0</td><td>Input</td><td>Digital Interface Format
The required relationship between the Left/Right clock, serial clock and serial data is defined.
<table>
<tr><th>DIF1</th><th>DIF0</th><th>DESCRIPTION</th><th>FORMAT</th></tr>
<tr><td>0</td><td>0</td><td>I²S, up to 24-bit data</td><td>0</td></tr>
<tr><td>0</td><td>1</td><td>Left Justified, 24-bit Data</td><td>1</td></tr>
<tr><td>1</td><td>0</td><td>Right Justified, 24-bit Data</td><td>2</td></tr>
<tr><td>1</td><td>1</td><td>Right Justified, 16-bit Data</td><td>3</td></tr>
</table>
Digital Interface Format</td></tr>
<tr><td>8</td><td>DEM0</td><td>Input</td><td>De-emphasis Control
Implementation of the standard 15 µs/50 µs digital de-enphasis filter response, required reconfiguration of the digital filter to maintain the proper filter response for 32, 44.1 or 48 kHz sample rates.
When using Internal Serial Clock Mode, as described above, Pin 3 is available for de-emphasis control, DEM1, and all de-enphasis filters are available.
When using External Serial Clock Mode, as described above, Pin 3 is not available for de-emphasis use and only the 44.1 kHz de-emphasis filter is available.
Note: De-emphasis is not available in High-Rate Mode.
<table>
<tr><th>DEM0</th><th>DESCRIPTION</th></tr>
<tr><td>0</td><td>Disabled</td></tr>
<tr><td>1</td><td>44.1 kHz</td></tr>
<tr><td>0</td><td>48 kHz</td></tr>
<tr><td>1</td><td>32 kHz</td></tr>
</table>
Internal Serial Clock Mode
<table>
<tr><th>DEM0</th><th>DESCRIPTION</th></tr>
<tr><td>0</td><td>Disabled</td></tr>
<tr><td>1</td><td>44.1 kHz</td></tr>
</table>
External Serial Clock Mode</td></tr>
<tr><td>9</td><td>FILT+</td><td>Output</td><td>Positive Voltage Reference
Positive reference for internal sampling circuits.
An external capacitor is required from FILT+ to analog ground.
The recommended value will typically provide 60 dB of PSRR at 1 kHz and 40 dB of PSRR at 60 kHz.
FILT+ is not intended to supply external circuit. FILT+ has a typical source impedance of 250 kohms and any current drawn from this pin will alter device performance.</td></tr>
<tr><td>10</td><td>VQ</td><td>Output</td><td>Quiescent Voltage
Filter connection for internal quiescent reference voltage, typically 50 % of VA.
Capacitors must be connected from VQ to analog ground.
VQ is not intended to supply external current.
VQ has a typical source impedance of 250 kohms and any current drawn from this pin will alter device performance.</td></tr>
<tr><td>11</td><td>REF_GND</td><td>Input</td><td>Reference Ground
Ground reference for the internal sampling circuits. Must be connected to analog ground.</td></tr>
<tr><td>12</td><td>AOUTR</td><td>Output</td><td>Analog Output
The full scale analog output level is specified in the Analog Characteristics specifications table.</td></tr>
<tr><td>13</td><td>AGND</td><td>Input</td><td>Ground
Ground Reference.</td></tr>
<tr><td>14</td><td>VA</td><td>Input</td><td>Analog Power
Analog power supply. Typically 3 to 5 VDC.</td></tr>
<tr><td>15</td><td>AOUTL</td><td>Output</td><td>Analog Output
The full scale analog output level is specified in the Analog Characteristics specifications table.</td></tr>
<tr><td>16*</td><td>MUTEC</td><td>Output</td><td>Mute Control
The Mute Control pin goes high during power-up initialization, reset, muting, master clock to left/right clock frequency ratio is incorrect or power-down this pin is intended to be used as a control for an external mute circuit to prevent the clicks and pops that can occur in any single supply system. Use of Mute Control is not mandatory but recommended for designs requiring the absolute minimum in extraneous clicks and pops.</td></tr>
</table>

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC501 VHiLC75341M-1: Audio Processor (LC75341M)



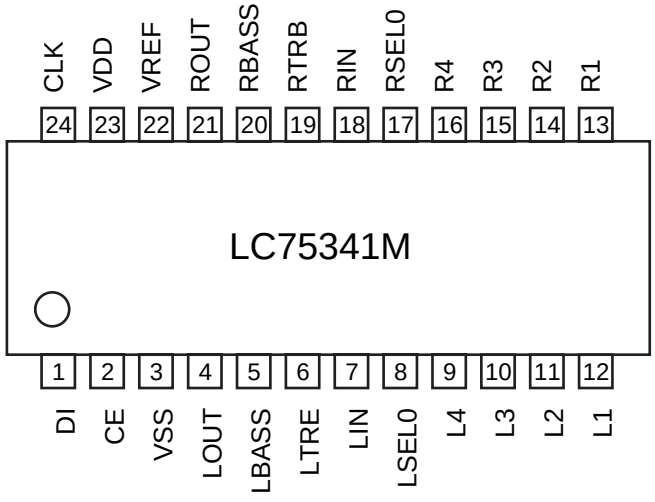


Figure 47 BLOCK DIAGRAM OF IC

IC701 RH-iX0557AWZZ: System Microcomputer (IX0557AW) (1/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
1	PA5/AN5	KEY2	A/D Input	A/D input, main set key.
2	PA4/AN4	KEY3	A/D Input	A/D input, main set key.
3	PA3/AN3	TUN_SM	Output	TUNER IF signal monitor.
4*	PA2/AN2	DAC_DATA	Output	Fix to "L".
5*	PA1/AN1	DAC_CLOCK	A/D Input	Digital analog converter CLK output.
6	PA0/AN0	PROTECT	A/D Input	Power abnormal detection.
7	P97/BUZ02/AN15	MOT_LOCK	A/D Input	Lid motor over current detection.
8	P96/PWM0/AN14	O/C_SW	A/D Input	A/D input, CD open/close switch.
9	P95/RTP0/AN13	H/P_SW	Input	Headphones switch input detection.
10	P94/RTP1/AN12	FAN_LOCK	A/D Input	Fan stop detection.
11	P93/SRDY3/AN11	FAN_CHK	Input	Ventilation fan motor control. H: FAN ON
12	P92/SCLK3/AN10	POWER_LEVEL 1	Input	1-bit amp. and power switch protect.
13	P91/SOUT3/AN9	POWER_LEVEL 2	Input	Speaker protect.
14	P90/SIN3/AN8	+B_CHK	Input	Observe power on input and decide reset timing.
15	P83/CNTR0/CNTR2	S_MUTE	Output	Audio mute control. H: MUTE ON
16	P82/CNTR1	TIMER_STBY	Output	Timer stand-by LED control. H: LED ON
17	CNVSS	CNVSS	Input	GND
18	RESET	RESET	Input	System microcomputer reset input. L: RESET
19	P81/XCOUT	SP_RELAY	Output	Speaker output control by relay. H: RELAY ON
20	P80/XCIN	POWER	Output	Main trans ON/OFF control by relay. H: RELAY ON
21	VSS	VSS	Input	GND
22	XIN	XIN	Input	Main clock input. 4.19 MHz
23	XOUT	XOUT	Output	Main clock input. 4.19 MHz
24	VCC	VCC	Input	Power supply 5 V.
25*	P77/INT4/BUZ01	NO USE	Output	Open.
26*	P76/T3OUT	CD_FUNC	Output	CD & Ext. DIG function selector.
27	P75/T1OUT	DIG_FUNC	Output	Ext. DIG out ON/OFF control. L: DIG OUT ON H: DIG OUT OFF
28	P74/PWM1	A/D_RESET	Output	1-bit amp. A/D reset control.
29*	P73/INT3/DIMOUT	NO USE	Output	Open.
30	P72/INT2	RX-IN	Input	Remote control decoder input.
31	P71/INT1	SYS_STOP	Input	AC power signal monitor.
32	P70/INT0	OFFSET	Input	1-bit amp. offset error detection.
33	P67/SRDY2/SCLK/ FLD55	CD_RESET	Output	SANYO CD DSP reset output. L: RESET
34	P66/SCLK2/FLD54	CD_CLK	Output	SANYO CD DSP interface clock output.
35	P65/TXD/FLD53	CD_DI	Output	SANYO CD DSP interface data output.
36	P64/RXD/FLD52	CD_CE	Input	SANYO CD DSP interface chip enable.
37	P63/FLD51	CD_DO	Input	SANYO CD DSP interface data input.
38	P62/FLD50	CD_DRF	Input	SANYO CD DSP RF monitor signal.
39	P61/FLD49	CD_WRQ	Input	SANYO CD DSP interface syncro signal.
40	P60/FLD48	CE	Output	SANYO TUNER PLL/VOL IC interface chip enable output.
41	P57/FLD47	CLK	Output	SANYO TUNER PLL/VOL IC interface clock output.
42	P56/FLD46	DI	Output	SANYO TUNER PLL/VOL IC interface data output.
43	P55/FLD45	DO	Input	SANYO TUNER PLL/VOL IC interface data input.
44	P54/FLD44	EQ_CONT	Output	VOL 0-26: H VOL 27-40: L POWER OFF, CLOCK CONFIRMATION: L
45	P53/FLD43	40V_RELAY	Output	40 V control port. "H": ACTIVE "L": OFF
46*-48*	P52/FLD42-P50/FLD40	NO USE	Output	Open.
49*-55*	P47/FLD39-P41/FLD33	NO USE	Output	Open.
56	P40/FLD32	SEG_24	Output	FL segment driver.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC701 RH-iX0557AWZZ: System Microcomputer (IX0557AW) (2/2)

Pin No.	Port Name	Terminal Name	Input/Output	Function
57-64	P37/FLD31-P30/FLD24	SEG_23-SEG_16	Output	FL segment driver.
65-72	P17/FLD23-P10/FLD16	SEG_15-SEG_8	Output	FL segment driver.
73-79	P07/FLD15-P01/FLD9	SEG_7-SEG_1	Output	FL segment driver.
80	P00/FLD8	DIG_9	Output	FL digit driver.
81-88	P27/FLD7-P20/FLD0	DIG_8-DIG1	Output	FL digit driver.
89	VEE	VEE	Input	VLOAD -35 V.
90*	PB6/SIN1	RDS_RST	Output	RDS RAM reset.
91*	PB5/SOUT1	RDS_DATA	Input	RDS data input.
92*	PB4/SCLK11	RDS_CLK	Output	RDS clock output.
93*	PB3/SSTB1	RDS_RDY	Input	RDS ready output.
94*	PB2/SBUSY1	—	Output	Connect to ground.
95	PB1/SRDY1	SURROUND	Output	Surround output control.
96	PB0/SCLK12/SVIN/DA	ILU_LED	Output	Illumination LED.
97	AVSS	AVSS	Input	A/D analog GND.
98	VREF	VREF	Input	A/D reference voltage 5 V.
99	PA7/AN7	INI	Input	A/D input, destination setting input.
100	PA6/AN6	KEY1	Input	A/D input, main set key.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC701 RH-iX0557AWZZ: System Microcomputer (IX0557AW)

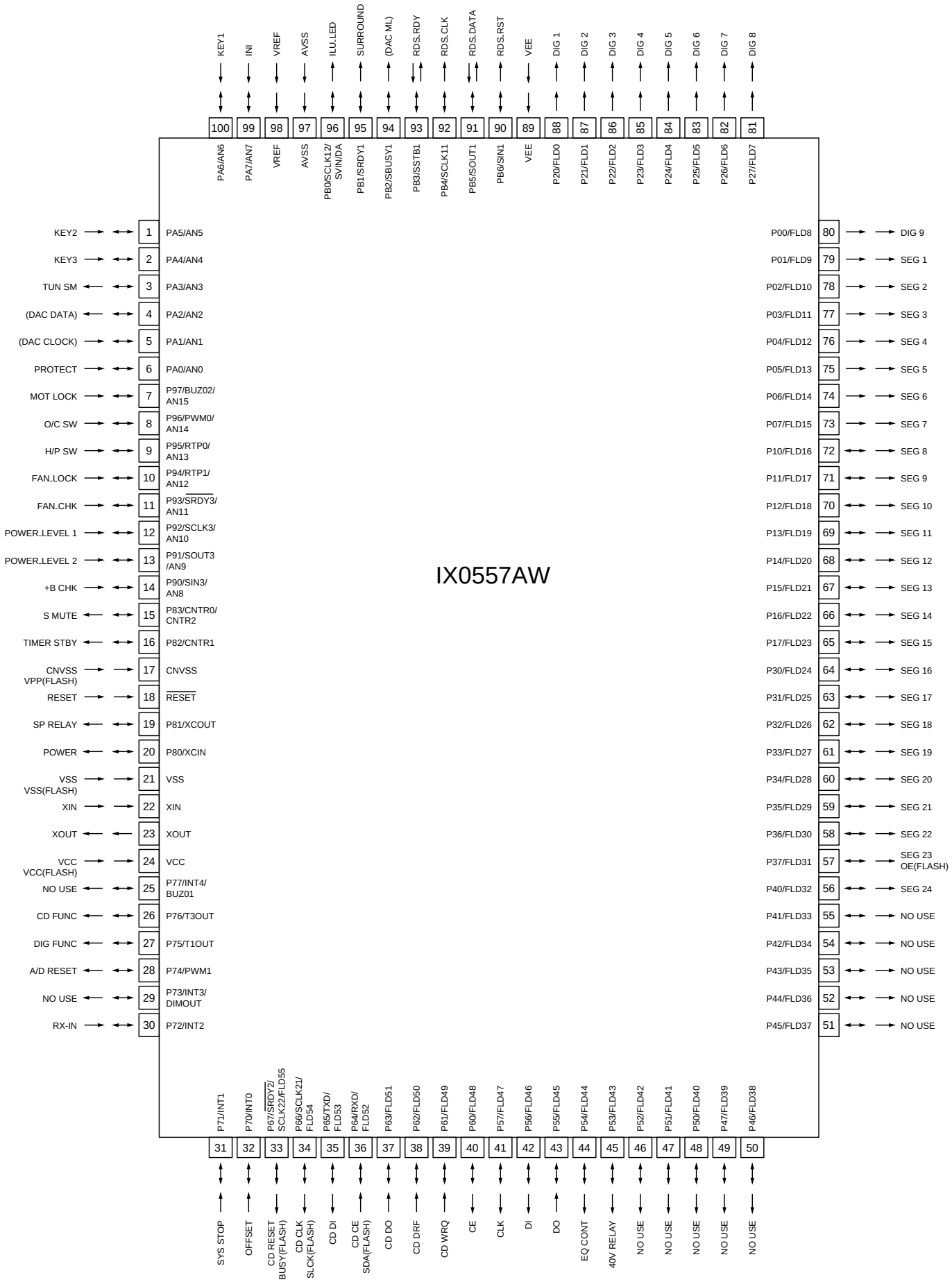

IX0557AW
1 PA5/AN5 — KEY2
2 PA4/AN4 — KEY3
3 PA3/AN3 — TUN SM
4 PA2/AN2 — (DAC DATA)
5 PA1/AN1 — (DAC CLOCK)
6 PA0/AN0 — PROTECT
7 P97/BUZ02/AN15 — MOT LOCK
8 P96/PWM0/AN14 — O/C SW
9 P95/RTP0/AN13 — H/P SW
10 P94/RTP1/AN12 — FAN.LOCK
11 P93/SRDY3/AN11 — FAN.CHK
12 P92/SCLK3/AN10 — POWER.LEVEL 1
13 P91/SOUT3/AN9 — POWER.LEVEL 2
14 P90/SIN3/AN8 — +B CHK
15 P83/CNTR0/CNTR2 — S MUTE
16 P82/CNTR1 — TIMER STBY
17 CNVSS — CNVSS VPP(FLASH)
18 RESET — RESET
19 P81/XCOUT — SP RELAY
20 P80/XCIN — POWER
21 VSS — VSS VSS(FLASH)
22 XIN — XIN
23 XOUT — XOUT
24 VCC — VCC VCC(FLASH)
25 P77/INT4/BUZ01 — NO USE
26 P76/T3OUT — CD FUNC
27 P75/T1OUT — DIG FUNC
28 P74/PWM1 — A/D RESET
29 P73/INT3/DIMOUT — NO USE
30 P72/INT2 — RX-IN
31 P71/INT1 — SYS STOP
32 P70/INT0 — OFFSET
33 P67/SRDY2/SCLK22/FLD55 — CD RESET BUSY(FLASH)
34 P66/SCLK21/FLD54 — CD CLK SLCK(FLASH)
35 P65/TXD/FLD53 — CD DI
36 P64/RXD/FLD52 — CD CE SDA(FLASH)
37 P63/FLD51 — CD DO
38 P62/FLD50 — CD DRF
39 P61/FLD49 — CD WRQ
40 P60/FLD48 — CE
41 P57/FLD47 — CLK
42 P56/FLD46 — DI
43 P55/FLD45 — DO
44 P54/FLD44 — EQ CONT
45 P53/FLD43 — 40V RELAY
46 P52/FLD42 — NO USE
47 P51/FLD41 — NO USE
48 P50/FLD40 — NO USE
49 P47/FLD39 — NO USE
50 P46/FLD38 — NO USE
51 P45/FLD37 — NO USE
52 P44/FLD36 — NO USE
53 P43/FLD35 — NO USE
54 P42/FLD34 — NO USE
55 P41/FLD33 — NO USE
56 P40/FLD32 — SEG 24
57 P37/FLD31 — SEG 23 OE(FLASH)
58 P36/FLD30 — SEG 22
59 P35/FLD29 — SEG 21
60 P34/FLD28 — SEG 20
61 P33/FLD27 — SEG 19
62 P32/FLD26 — SEG 18
63 P31/FLD25 — SEG 17
64 P30/FLD24 — SEG 16
65 P17/FLD23 — SEG 15
66 P16/FLD22 — SEG 14
67 P15/FLD21 — SEG 13
68 P14/FLD20 — SEG 12
69 P13/FLD19 — SEG 11
70 P12/FLD18 — SEG 10
71 P11/FLD17 — SEG 9
72 P10/FLD16 — SEG 8
73 P07/FLD15 — SEG 7
74 P06/FLD14 — SEG 6
75 P05/FLD13 — SEG 5
76 P04/FLD12 — SEG 4
77 P03/FLD11 — SEG 3
78 P02/FLD10 — SEG 2
79 P01/FLD9 — SEG 1
80 P00/FLD8 — DIG 9
81 P27/FLD7 — DIG 8
82 P26/FLD6 — DIG 7
83 P25/FLD5 — DIG 6
84 P24/FLD4 — DIG 5
85 P23/FLD3 — DIG 4
86 P22/FLD2 — DIG 3
87 P21/FLD1 — DIG 2
88 P20/FLD0 — DIG 1
89 VEE — VEE
90 PB6/SIN1 — RDS.RST
91 PB5/SOUT1 — RDS.DATA
92 PB4/SCLK11 — RDS.CLK
93 PB3/SSTB1 — RDS.RDY
94 PB2/SBUSY1 — (DAC ML)
95 PB1/SRDY1 — SURROUND
96 PB0/SCLK12/SVIN/DA — ILU.LED
97 AVSS — AVSS
98 VREF — VREF
99 PA7/AN7 — INI
100 PA6/AN6 — KEY1

Figure 50 BLOCK DIAGRAM OF IC

ICA100 RH-iX0498AWZZ: 7th Order ⊿Σ Modulation Conversion LSI (IX0498AW)

Pin No.	Port Name	Input/Output	Function
1	VDDL	Input	L channel digital output section power terminal.
2	OUTL (+)	Output	L channel forward output terminal.
3	OUTL (–)	Output	L channel reverse output terminal.
4	GNDD	—	Digital output section ground terminal.
5	OUTR (–)	Output	R channel reverse output terminal.
6	OUTR (+)	Output	R channel forward output terminal.
7	VDDR	Input	R channel digital output section power terminal.
8	VDDX	Input	Oscillation section power terminal.
9	XI	Input	Quartz oscillator connection terminal. Clock necessary for the system is generated.
10	XO	Output	Quartz oscillator connection terminal. Clock necessary for the system is generated.
11	GNDX	—	Oscillation section ground terminal.
12*	MCK	Output	System clock output terminal.
13*	TEST	Input	Test terminal. As usual, it is used at "L".
14	NFR1 (+)	Input	R channel forward signal feedback input terminal.
15	NFR2 (–)	Input	R channel reverse signal feedback input terminal.
16	GNDA	—	Analog ground terminal for AD converter.
17	Rch IN	Input	R channel analog input terminal.
18	Rch Vref	Input	Reference voltage terminal for R channel.
19	Lch Vref	Input	Reference voltage terminal for L channel.
20	Lch IN	Input	L channel analog input terminal.
21	RESET	Input	Reset terminal. It is reset with "L".
22	NFL2 (–)	Input	L channel reverse signal feedback input terminal.
23	NFL1 (+)	Input	L channel forward signal feedback input terminal.
24	VDDA	Input	Analog current terminal for AD converter.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

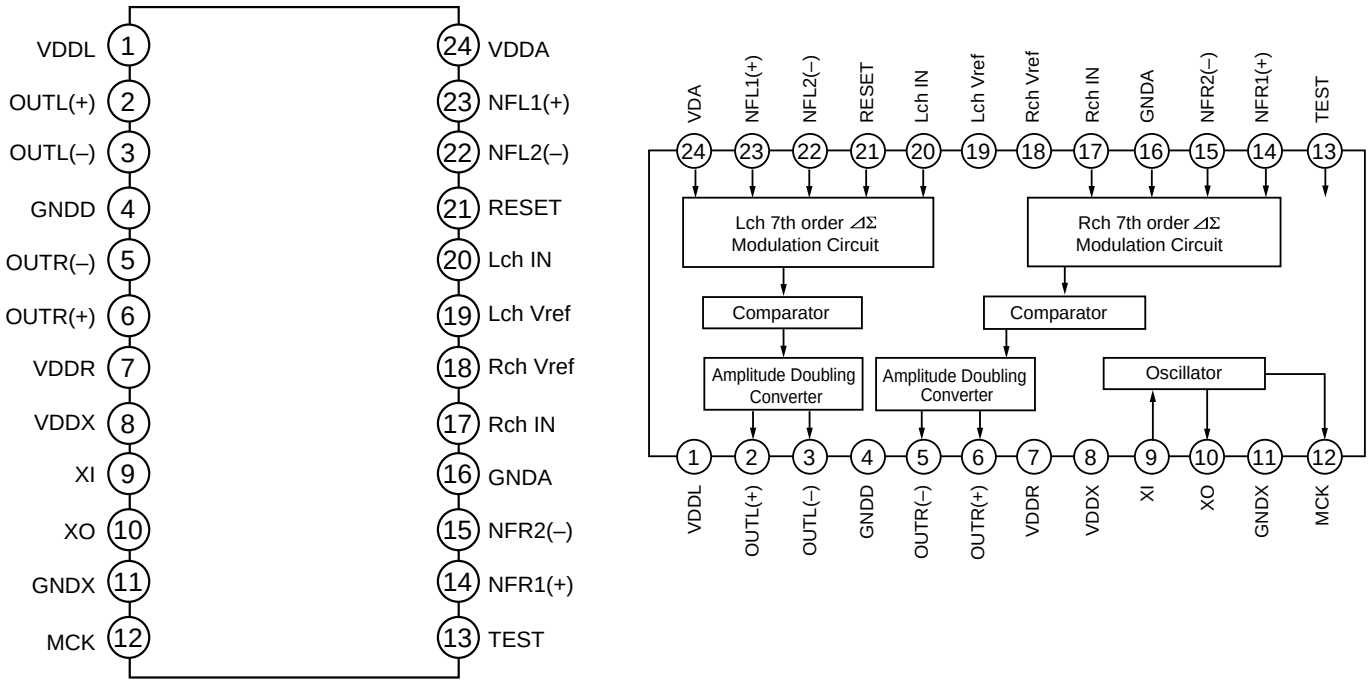


Figure 51 BLOCK DIAGRAM OF IC

ICA101, ICA102 VHiSLA5515M-1: Switching Audio Power Amp. (SLA5515M)

Pin No.	Terminal Name	Function
1	SA	Output stage low-side source terminal.
2, 3	OUTA	Output stage switching output.
4, 5	VBBA	Output stage power supply.
6	VBOOTA	Bootstrap condenser terminal.
7, 8	DTADJA, DTADJB	Dead time adjusting terminal.
9	INA	Logic input.
10	VKK	Lowest potential terminal of controller.
11	VCC	Power supply to pre-driver.
12	VKK	Lowest potential terminal of controller.
13	INB	Logic input.
14	GND	Ground for controller.
15	VDD	Power supply to controller.
16	VBOOTB	Bootstrap condenser terminal.
17, 18	VBBB	Output stage power supply.
19, 20	OUTB	Output stage switching output.
21	SB	Output stage low-side source terminal.

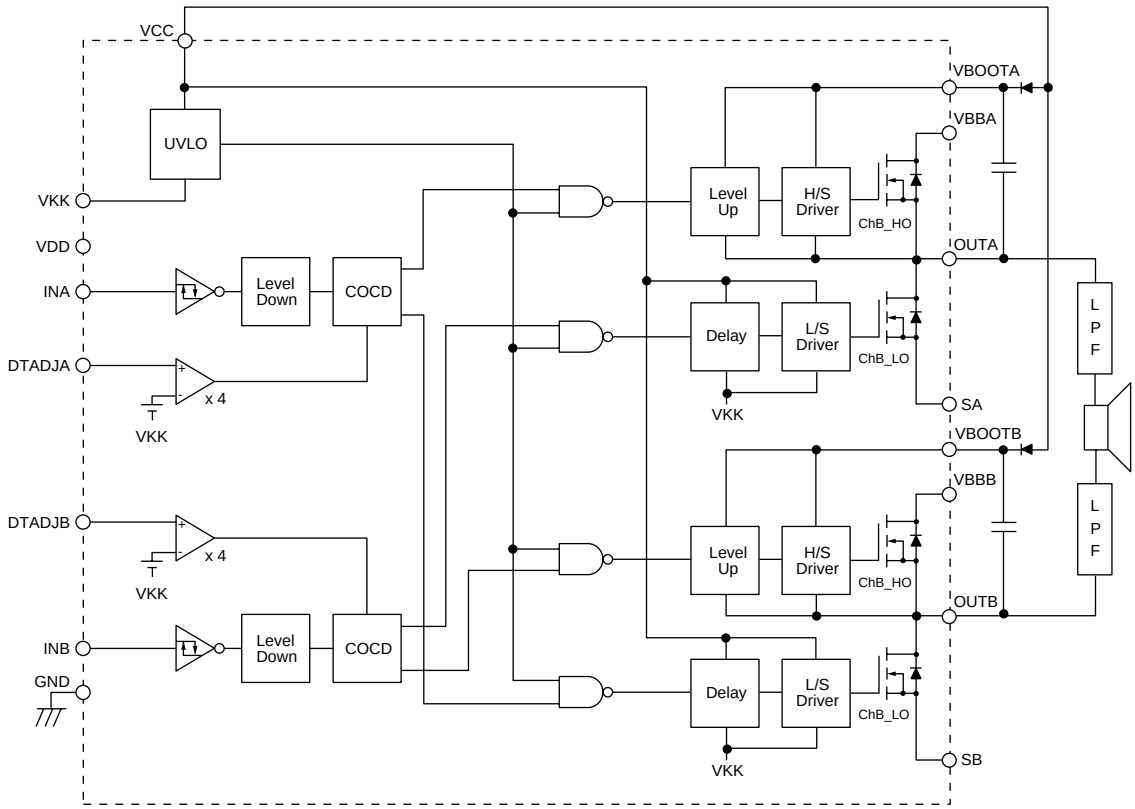


Figure 52 BLOCK DIAGRAM OF IC

SHARP PARTS GUIDE

1-BIT DIGITAL AUDIO SYSTEM

MODEL SD-EX200

SD-EX200 1-Bit Digital Audio System consisting of SD-EX200 (main unit) and CP-EX200 (speaker system).

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following information.

1. MODEL NUMBER
2. REF. No.
3. PART NO.
4. DESCRIPTION

★ MARK: SPARE PARTS-DELIVERY SECTION

For U.S.A. only

Contact your nearest SHARP Parts Distributor to order.

For location of SHARP Parts Distributor,
Please call Toll-Free;
1-800-BE-SHARP

Explanation of capacitors/resistors parts codes

Capacitors

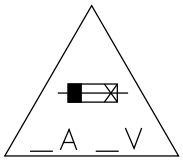
VCC ..... Ceramic type
VCK ..... Ceramic type
VCT ..... Semiconductor type
VC • • MF ..... Cylindrical type (without lead wire)
VC • • MN ..... Cylindrical type (without lead wire)
VC • • TV ..... Square type (without lead wire)
VC • • TQ ..... Square type (without lead wire)
VC • • CY ..... Square type (without lead wire)
VC • • CZ ..... Square type (without lead wire)
VC • • • • • • • • • J .. The 13th character represents capacity difference.
("J" ±5%, "K" ±10%, "M" ±20%, "N" ±30%,
"C" ±0.25 pF, "D" ±0.5 pF, "Z" +80-20%.)

If there are no indications for the electrolytic capacitors, error is ±20%.

Resistors

VRD ..... Carbon-film type
VRS ..... Carbon-film type
VRN ..... Metal-film type
VR • • MF ..... Cylindrical type (without lead wire)
VR • • MN ..... Cylindrical type (without lead wire)
VR • • TV ..... Square type (without lead wire)
VR • • TQ ..... Square type (without lead wire)
VR • • CY ..... Square type (without lead wire)
VR • • CZ ..... Square type (without lead wire)
VR • • • • • • • • • J .. The 13th character represents error.
("J" ±5%, "F" ±1%, "D" ±0.5%.)

If there are no indications for other parts, the resistors are ±5% carbon-film type.



CAUTION:FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE F901 6A, 125V FUSE

ATTENTION:POUR ASSURER UNE LONGUE PROTECTION CONTRE UNINCENDIE, REMPLACER SEULEMENT PAR UN FUSIBLE DE TYPE F901 6A, 125V

NOTE:
Parts marked with "⚠" are important for maintaining the safety of the set.
Be sure to replace parts with specified ones for maintaining the safety and performance of the set.

SD-EX200

NO.	PART CODE	★	PRICE RANK	DESCRIPTION

SD-EX200

INTEGRATED CIRCUITS

IC1	VHILC78646E-1	J	AY	CD Servo,LC78646E
IC2	VHILA6574H+-1	J	AN	Focus/Tracking/Spin/Sled Driver, LA6574H
IC3	VHILM358D++-1	J	AE	OP-Amp.,LM358D
IC4	VHPGP351TZ/-1	J	AM	Digital Out,GP351TZ
IC101	VHICS4340KS-1	J	AN	DAC IC,CS4340KS
IC400	VHIKIA7812AP1	J	AF	Voltage Regulator,KIA7812AP
IC401	VHIKIA7809AP1	J	AF	Voltage Regulator,KIA7809AP
IC402	VHIKIA7808AP1	J	AF	Voltage Regulator,KIA7808AP
IC501	VHILC75341M-1	J	AM	Audio Processor,LC75341M
IC502	VHINJM4565M-1	J	AC	Buffer Amp.,NJM4565M
IC608	VHIPST9140/-1	J	AG	Reset,PST9140
IC701	RH-IX0557AWZZ	J	AX	System Microcomputer, IX0557AW
IC780	VHIAN78L05/-1	J	AE	Voltage Regulator,AN78L05
⚠ IC901	VHISTRF6238-1	J	AZ	Switching Regulator,STRF6238
IC931	VHISE-B2+++-1	J	AL	Error Amp.,SE-B2
IC933	VHIKIA7809AP1	J	AF	Voltage Regulator,KIA7809AP
IC934	VHIAN78L05/-1	J	AE	Voltage Regulator,AN78L05
ICA100	RH-IX0498AWZZ	J	AZ	7th Order ⊿Σ Modulation Conversion LSI,IX0498AW
ICA101,102	VHISLA5515M-1	J	BB	Switching Audio Power Amp., SLA5515M
ICA401	VHITJM4558CD1	J	AE	Ope Amp.,TJM4558CD

TRANSISTORS

Q1	VSKTA1266GR-1	J	AB	Silicon,PNP,KTA1266 GR
Q2	VSKTC3199GR-1	J	AB	Silicon,NPN,KTC3199 GR
Q3	VSKTA1270Y/-1	J	AD	Silicon,PNP,KTA1270 Y
Q82	VSKRC104M//-1	J	AC	Digital,NPN,KRC104 M
Q84	VSKRA107M//-1	J	AE	Digital,PNP,KRA107 M
Q101	VSKRC102M//-1	J	AC	Digital,NPN,KRC102 M
Q400	VSKRC107M//-1	J	AC	Digital,NPN,KRC107 M
Q421	VSKTA1271Y/-1	J	AC	Silicon,PNP,KTA1271 Y
Q422	VSKTC3199GR-1	J	AB	Silicon,NPN,KTC3199 GR
Q423,424	VSKTC3203Y/-1	J	AC	Silicon,NPN,KTC3203 Y
Q535	VSKRC107M//-1	J	AC	Digital,NPN,KRC107 M
Q536	VSKRA107M//-1	J	AE	Digital,PNP,KRA107 M
Q538	VS2SK246GR/-1	J	AB	FET,2SK246 GR
Q539,540	VSKTC3199GR-1	J	AB	Silicon,NPN,KTC3199 GR
Q543,544	VSKTC3199GR-1	J	AB	Silicon,NPN,KTC3199 GR
Q545	VSKRA107M//-1	J	AE	Digital,PNP,KRA107 M
Q546	VSKTA1266GR-1	J	AB	Silicon,PNP,KTA1266 GR
Q547,548	VSKTC2874B+-1	J	AC	Silicon,NPN,KTC2874 B
Q551,552	VSKTC3199GR-1	J	AB	Silicon,NPN,KTC3199 GR
Q606~608	VSKRC104M//-1	J	AC	Digital,NPN,KRC104 M
⚠ Q902	VSKTA1266GR-1	J	AB	Silicon,PNP,KTA1266 GR
Q931	VSKTA1023Y/-1	J	AE	Silicon,PNP,KTA1023 Y
Q933	VSKTC3199GR-1	J	AB	Silicon,NPN,KTC3199 GR
QA400	VS2SB709AR+-1	J	AB	Silicon,PNP,2SB709 AR
QA414	VS2SB709AR+-1	J	AB	Silicon,PNP,2SB709 AR
QA415	VS2SD601AR/-1	J	AC	Silicon,NPN,2SD601 AR
QA416	VSKRC104S//-1	J	AC	Digital,NPN,KRC104 S
QS01	VSKRC102S//-1	J	AB	Digital,NPN,KRC102 S
QS02,03	VSKRA102S//-1	J	AB	Digital,PNP,KRA102 S
QS04	VSKRC102S//-1	J	AB	Digital,NPN,KRC102 S
QS05	VSKRC107S//-1	J	AB	Digital,NPN,KRC107 S
QS06~08	VSKTC3875GR-1	J	AB	Silicon,NPN,KTC3875 GR
QS10,11	VSKTA1504GR-1	J	AB	Silicon,PNP,KTA1504 GR
QS12	VSKRC102S//-1	J	AB	Digital,NPN,KRC102 S
QS13,14	VSKTA1504GR-1	J	AB	Silicon,PNP,KTA1504 GR

DIODES

D1,2	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
D82	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
D101	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
D400~404	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
D421~423	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
D535	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
D603~605	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
D608	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
D615~617	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
D780,781	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
⚠ D901	VHDD5SB60++1F	J	AH	Silicon,D5SB60
⚠ D902	VHDSARS03++-1	J	AN	Silicon,SARS03
⚠ D905~907	VHDAG01Z+++-1	J	AD	Silicon,AG01Z
D908	VHDAK09++++-1	J	AE	Silicon,AK09
D930	VHDFMLG22S+-1	J	AM	Silicon,FMLG22S
D937,938	VHDEK19++++-1	J	AF	Silicon,EK19
D939	VHDAG01Z+++-1	J	AD	Silicon,AG01Z
D942	VHDD1NL20U+-1	J	AD	Silicon,D1NL20U
D944	VHDAG01Z+++-1	J	AD	Silicon,AG01Z
D947	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
⚠ D950~953	VHDGD1N4004-1	J	AB	Silicon,GD1N4004
D957	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
DA107	VHDMA132WK/-1	J	AB	Silicon,MA132WK
DA108~115	VHDSFPW56++-1	J	AE	Silicon,SFPW56
DA116	VHDMA132WA/-1	J	AB	Silicon,MA132WA
DA130~133	VHDMA111//-1	J	AC	Silicon,MA111
DA400	VHDMA111//-1	J	AC	Silicon,MA111
DA401	VHDKDS226//-1	J	AB	Silicon,KDS226
DA403	VHDMA111//-1	J	AC	Silicon,MA111
DA404	VHDMA132WA/-1	J	AB	Silicon,MA132WA
DA405	VHDMA111//-1	J	AC	Silicon,MA111
DS01	VHDMA111//-1	J	AC	Silicon,MA111
DS02,03	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
DS04	VHDMA111//-1	J	AC	Silicon,MA111
DS05,06	VHDDS1SS133-1	J	AB	Silicon,DS1SS133
DS12	VHDMA111//-1	J	AC	Silicon,MA111
LED500~507	VHP304HT2P+-1	J	AC	LED,Red,304HT2P
LED601	VHP304VT2E2-1	J	AC	LED,Red,304VT2E2
LED602	VHPA503BC2E-1	J	AN	LED,White,A503BC2E
LED604	VHP304BC2E9-1	J	AK	LED,Blue,304BC2E9
ZD1	VHEDZ6R2BSB-1	J	AC	Zener,6.2V,DZ6.2BSB
ZD2	VHEDZ5R6BSB-1	J	AC	Zener,5.6V,DZ5.6BSB
ZD400	VHEDZ3R3BSB-1	J	AB	Zener,3.3V,DZ3.3BSB
ZD401	VHEMTZJ6R8A-1	J	AA	Zener,6.8V,MTZJ6.8A (Serial No. 30300001~30400519) [For U.S.A.]
ZD401	VHEMTZJ6R8A-1	J	AA	Zener,6.8V,MTZJ6.8A (Serial No. 30400001~30400050) [For Canada]
ZD401	VHEDZ5R6BSC-1	J	AC	Zener,5.6V,DZ5.6BSC (Serial No. 30600520~) [For U.S.A.]
ZD401	VHEDZ5R6BSC-1	J	AC	Zener,5.6V,DZ5.6BSC (Serial No. 30600051~) [For Canada]
ZD402	VHEDZ5R1BSB-1	J	AC	Zener,5.1V,DZ5.1BSB
ZD421	VHEMTZJ6R8A-1	J	AA	Zener,6.8V,MTZJ6.8A
ZD556	VHEMTZJ5R6A-1	J	AC	Zener,5.6V,MTZJ5.6A (Serial No. 30300001~30400519) [For U.S.A.]
ZD556	VHEMTZJ5R6A-1	J	AC	Zener,5.6V,MTZJ5.6A (Serial No. 30400001~30400050) [For Canada]
ZD556	VHEDZ4R7BSC-1	J		Zener,4.7V,DZ4.7BSC (Serial No. 30600520~) [For U.S.A.]
ZD556	VHEDZ4R7BSC-1	J		Zener,4.7V,DZ4.7BSC (Serial No. 30600051~) [For Canada]
ZD931	VHEHZ3ALL//-1	J	AC	Zener,3V,HZ3ALL
ZD932	VHEDZ270BSA-1	J	AB	Zener,27V,DZ27BSA
ZD933	VHEDZ3R6BSA-1	J	AB	Zener,3.6V,DZ3.6BSA

TRANSFORMERS

⚠ T901	RTRNZ0007AWZZ	J	AX	Power,Main
⚠ T903	RTRNP0483AWZZ	J	AL	Power,Sub

COILS

L1	VP-XHR82K0000	J	AC	0.82 µH
L2	VP-XH2R2K0000	J	AB	2.2 µH,Choke
L101	VP-XHR82K0000	J	AC	0.82 µH
L601,602	VP-XH2R2K0000	J	AB	2.2 µH,Choke
⚠ L901,902	RCILZ0063AWZZ	J	AL	AC Line Filter
⚠ L905	RCORF0023AWZZ	J	AB	Core,Ferrite Core
L931	RCILZ0064AWZZ	J	AE	3.3 µH
LA100~103	RCORF0023AWZZ	J	AB	Core,Ferrite Core
LA104~107	RCILZ0048AWZZ	J	AM	Coil
LA400	RCORF0020AWZZ	J	AD	Core,Ferrite Core
LF401,402	RCILZ0055AWZZ	J	AH	Coil
LFA100,101	RCILZ0055AWZZ	J	AH	Coil

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
LFA400	RCILZ0054AWZZ	J	AH	Coil
LFA402,403	RCILZ0040AWZZ	J	AH	Coil

VARIABLE RESISTORS

VRA100	RVR-M0024AWZZ	J	AC	4.7 kohms (B),Semi-VR [R-CH Output Offset Adjustment]
VRA101	RVR-M0024AWZZ	J	AC	4.7 kohms (B),Semi-VR [L-CH Output Offset Adjustment]

VIBRATORS

CXA100	RCRSP0030AWZZ	J	AF	Crystal,11.2896 MHz
XL1	RCRSP0020AWZZ	J	AG	Crystal,16.9344 MHz
XL601	RCRSP0003AWZZ	J	AH	Crystal,4.19 MHz

THERMISTOR

⚠ PS421	RH-QX0006AWZZ	J	AE	Posistor,4.7 ohms
⚠ PS931	RH-QX0017AWZZ	J	AG	Posistor,1.7 ohms
⚠ PS932	RH-QX0010AWZZ	J	AE	Posistor,0.5 ohms
⚠ PS934,935	RH-QX0016AWZZ	J	AK	Posistor,1.6 ohms
⚠ PSA400	RH-QX0022AWZZ	J	AF	Posistor
⚠ TH901	RH-QX0019AWZZ	J	AM	Thermistor,1.5 ohms

CAPACITORS

C1	RC-EZY476AF1E	J	AB	47 µF,25V,Electrolytic
C2	VCKYCY1HF103Z	J	AB	0.01 µF,50V
C3	VCKYCY1HB473K	J	AB	0.047 µF,50V
C4	VCCCCY1HH220J	J	AA	22 pF (CH),50V
C5	VCKYCY1HB102K	J	AA	0.001 µF,50V
C6	VCKYCY1HB272K	J	AA	0.0027 µF,50V
C7	VCCCCY1HH220J	J	AA	22 pF (CH),50V
C9,10	VCKYCY1HB102K	J	AA	0.001 µF,50V
C11	RC-EZY106AF1H	J	AB	10 µF,50V,Electrolytic
C12	RC-EZ0004AWZZ	J	AD	3.3 µF,16V,Electrolytic
C13	RC-EZY107AF1C	J	AB	100 µF,16V,Electrolytic
C14	VCKYCY1HB102K	J	AA	0.001 µF,50V
C15	RC-EZY224AF1H	J	AB	0.22 µF,50V,Electrolytic
C16	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C17	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C18	VCKYCY1HB103K	J	AA	0.01 µF,50V
C19	RC-EZY107AF1A	J	AB	100 µF,10V,Electrolytic
C20	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C21	RC-EZ0004AWZZ	J	AD	3.3 µF,16V,Electrolytic
C22	VCCCCY1HH100D	J	AA	10 pF (CH),50V
C29	RC-EZ0004AWZZ	J	AD	3.3 µF,16V,Electrolytic
C30,31	VCCCCY1HH180J	J	AA	18 pF (CH),50V
C33	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C35,36	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C37	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C38	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C39	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C40	VCKYCY1HB473K	J	AB	0.047 µF,50V
C41	RC-EZY224AF1H	J	AB	0.22 µF,50V,Electrolytic
C42	VCKYCY1CB104K	J	AB	0.1 µF,16V
C43	RC-EZY476AF1A	J	AB	47 µF,10V,Electrolytic
C44	VCKYCY1HB102K	J	AA	0.001 µF,50V
C50	VCKYCY1CB104K	J	AB	0.1 µF,16V
C51	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C52	VCKYCY1CB104K	J	AB	0.1 µF,16V
C53	VCEAZA1EW476M	J	AB	47 µF,25V,Electrolytic
C54	VCKYCY1CB104K	J	AB	0.1 µF,16V
C55	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C56	VCEAZA1EW476M	J	AB	47 µF,25V,Electrolytic
C57,58	VCEAZA1AW107M	J	AB	100 µF,10V,Electrolytic
C59	VCEAZA1EW107M	J	AB	100 µF,25V,Electrolytic
C60	VCEAZA1CW106M	J	AC	10 µF,16V,Electrolytic
C69	VCKYPA1HB102K	J	AA	0.001 µF,50V
C70	VCEAZA1AW107M	J	AB	100 µF,10V,Electrolytic
C81	VCKYCY1HF103Z	J	AB	0.01 µF,50V
C82	VCEAZA1EW336M	J	AB	33 µF,25V,Electrolytic
C83	VCEAZA0JW227M	J	AC	220 µF,6.3V,Electrolytic
C84	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C85	VCEAZA1AW107M	J	AB	100 µF,10V,Electrolytic
C86,87	VCKYCY1HB473K	J	AB	0.047 µF,50V
C88	VCKYBT1HB102K	J	AA	0.001 µF,50V
C101	VCEAZA1HW335M	J	AB	3.3 µF,50V,Electrolytic
C102	VCKYCY1HB103K	J	AA	0.01 µF,50V

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
C103	RC-EZ0047AWZZ	J	AC	10 µF,50V,Electrolytic
C105	RC-EZ0004AWZZ	J	AD	3.3 µF,16V,Electrolytic
C106	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C107	VCEAZA1EW106M	J	AB	10 µF,25V,Electrolytic
C108	RC-EZ0047AWZZ	J	AC	10 µF,50V,Electrolytic
C109	VCEAZA1HW105M	J	AB	1 µF,50V,Electrolytic
C110	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C113	VCEAZA1HW105M	J	AB	1 µF,50V,Electrolytic
C114	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C115,116	VCQYKA1HM152K	J	AB	0.0015 µF,50V,Mylar
C117	VCKYCY1HB102K	J	AA	0.001 µF,50V
C400	VCQYKA1HM473K	J	AB	0.047 µF,50V,Mylar
C401	VCKZPA1HF223Z	J	AA	0.022 µF,50V
C402,403	VCEAZA1HW105M	J	AB	1 µF,50V,Electrolytic
C404	VCKZPA1HF223Z	J	AA	0.022 µF,50V
C405	VCQYKA1HM473K	J	AB	0.047 µF,50V,Mylar
C406	VCEAZA1CW106M	J	AC	10 µF,16V,Electrolytic
C407	VCEAZA1HW105M	J	AB	1 µF,50V,Electrolytic
C408	VCKZPA1HF223Z	J	AA	0.022 µF,50V
C409	VCQYKA1HM473K	J	AB	0.047 µF,50V,Mylar
C410	VCKZPA1HF223Z	J	AA	0.022 µF,50V
C411	VCEAZA1CW106M	J	AC	10 µF,16V,Electrolytic
C421	VCEAZA1EW476M	J	AB	47 µF,25V,Electrolytic
C422	VCEAZA1CW106M	J	AC	10 µF,16V,Electrolytic
C423	VCEAZA1CW107M	J	AC	100 µF,16V,Electrolytic
C424	VCEAZA1CW106M	J	AC	10 µF,16V,Electrolytic
C425	VCEAZA1HW105M	J	AB	1 µF,50V,Electrolytic
C501	VCEAZA1CW107M	J	AC	100 µF,16V,Electrolytic
C502	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C503	VCEAZA1CW226M	J	AC	22 µF,16V,Electrolytic
C504	RC-EZ0004AWZZ	J	AD	3.3 µF,16V,Electrolytic
C511~513	VCFYFA1HA224J	J	AC	0.22 µF,50V,Thin Film
C514,515	VCKYCY1HB222K	J	AA	0.0022 µF,50V
C516	VCFYFA1HA224J	J	AC	0.22 µF,50V,Thin Film
C519	VCEAZA1HW105M	J	AB	1 µF,50V,Electrolytic
C520	RC-EZY105AF1H	J	AB	1 µF,50V,Electrolytic
C521	VCEAZA1HW225M	J	AB	2.2 µF,50V,Electrolytic
C522	RC-EZY225AF1H	J	AB	2.2 µF,50V,Electrolytic
C523,524	VCEAZA1HW225M	J	AB	2.2 µF,50V,Electrolytic
C525,526	RC-EZ0047AWZZ	J	AC	10 µF,50V,Electrolytic
C527,528	VCCCCY1HH470J	J	AA	47 pF (CH),50V
C530,531	VCFYFA1HA155J	J	AF	1.5 µF,50V,Thin Film
C535,536	VCKYCY1HB472K	J	AA	0.0047 µF,50V
C537	VCEAZA1HW224M	J	AB	0.22 µF,50V,Electrolytic
C538	VCKYCY1HB681K	J	AA	680 pF,50V
C541,542	VCFYFA1HA155J	J	AF	1.5 µF,50V,Thin Film
C543,544	VCCCCY1HH470J	J	AA	47 pF (CH),50V
C545,546	VCEAZA1HW106M	J	AB	10 µF,50V,Electrolytic
C548,549	VCKYCY1HB102K	J	AA	0.001 µF,50V
C552,553	VCKYCY1HB123K	J	AB	0.012 µF,50V
C555,556	VCEAZA1EW476M	J	AB	47 µF,25V,Electrolytic
C559,560	VCEAZA1CW107M	J	AC	100 µF,16V,Electrolytic
C564,565	VCKYCY1HB471K	J	AA	470 pF,50V
C566	VCKYCY1HB103K	J	AA	0.01 µF,50V
C568,569	VCCCCY1HH330J	J	AA	33 pF (CH),50V
C570~572	VCCCCY1HH181J	J	AA	180 pF (CH),50V
C601,602	VCKYCY1HB102K	J	AA	0.001 µF,50V
C603	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C604	VCKYPA1HB101K	J	AA	100 pF,50V
C605	VCCCCY1HH120J	J	AA	12 pF (CH),50V
C607	VCCCCY1HH180J	J	AA	18 pF (CH),50V
C608	RC-EZY107AF1C	J	AB	100 µF,16V,Electrolytic
C609	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C611	VCCCCY1HH151J	J	AA	150 pF (CH),50V
C612	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C613	RC-EZY106AF1C	J	AB	10 µF,16V,Electrolytic
C614	VCKYPA1HB101K	J	AA	100 pF,50V
C615	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C616,617	VCKYPA1HB101K	J	AA	100 pF,50V
C618~620	RC-EZY105AF1H	J	AB	1 µF,50V,Electrolytic
C622	RC-EZY106AF1C	J	AB	10 µF,16V,Electrolytic
C623	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C624	VCCCCY1HH101J	J	AA	100 pF (CH),50V
C625	VCKYCY1HB102K	J	AA	0.001 µF,50V
C627	VCKYCY1EF104Z	J	AA	0.1 µF,25V
C628	VCEAZA1AW477M	J	AC	470 µF,10V,Electrolytic
C629	VCKYCY1HB103K	J	AA	0.01 µF,50V
C630	RC-EZY475AF1H	J	AB	4.7 µF,50V,Electrolytic
C632,633	VCKYCY1HB103K	J	AA	0.01 µF,50V
C634	VCKYCY1HB102K	J	AA	0.001 µF,50V
C635	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C636	VCCCCY1HH101J	J	AA	100 pF (CH),50V

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
C637	VCKYCY1EF223Z	J	AB	0.022 µF,25V
C638	RC-EZY106AF1C	J	AB	10 µF,16V,Electrolytic
C639	VCKYCY1HB103K	J	AA	0.01 µF,50V
C650	RC-EZY107AF1A	J	AB	100 µF,10V,Electrolytic
C651	RC-EZY105AF1H	J	AB	1 µF,50V,Electrolytic
C770	VCKYCY1HB103K	J	AA	0.01 µF,50V
C780	RC-EZY105AF1H	J	AB	1 µF,50V,Electrolytic
C781,782	VCKYCY1EF473Z	J	AB	0.047 µF,25V
C785,786	VCKYBT1HB103K	J	AB	0.01 µF,50V
⚠ C901,902	RC-QZ0030AWZZ	J	AD	0.1 µF,250V
⚠ C903,904	RC-KZ0089GEZZ	J	AC	0.001 µF,250V,Ceramic
⚠ C905~909	RC-KZ007LAWZZ	J	AD	0.0022 µF,250V
⚠ C911	RC-EZ0127AWZZ	J		820 µF,200V,Electrolytic
⚠ C912	RC-QZ0029AWZZ	J	AE	0.01 µF,630V
⚠ C913,914	RC-KZ009LAWZZ	J	AE	0.01 µF,400V
⚠ C915	RC-QZ0032AWZZ	J	AE	0.0022 µF,630V
⚠ C916	VCKYCY1HB221K	J	AA	220 pF,50V
⚠ C917	VCQYKA1HM472K	J	AB	0.0047 µF,50V,Mylar
⚠ C918	VCEA4U1HN475M	J	AC	4.7 µF,50V,Electrolytic
⚠ C919	RC-EZ0099AWZZ	J	AC	33 µF,35V,Electrolytic
⚠ C920	VCKYPA1HB152K	J	AA	0.0015 µF,50V
⚠ C921	VCKYCY1HB103K	J	AA	0.01 µF,50V
C930	RC-QZ0028AWZZ	J	AE	0.0047 µF,630V
C932	RC-EZ0120AWZZ	J	AL	2200 µF,50V,Electrolytic
C938	RC-EZ0097AWZZ	J	AF	1000 µF,25V,Electrolytic
C939	VCCCCY1HH221J	J	AA	220 pF (CH),50V
C940	RC-EZ0123AWZZ	J	AK	2200 µF,50V,Electrolytic
C941,942	RC-EZ0097AWZZ	J	AF	1000 µF,25V,Electrolytic
C948	RC-EZ0121AWZZ	J	AD	100 µF,63V,Electrolytic
C949,950	VCEAZA1HW476M	J	AB	47 µF,50V,Electrolytic
C951	VCEAZA1EW227M	J	AC	220 µF,25V,Electrolytic
C953	VCEAZA1HW105M	J	AB	1 µF,50V,Electrolytic
C954,955	VCQYKA1HM473K	J	AB	0.047 µF,50V,Mylar
C956	VCEAZA1HW105M	J	AB	1 µF,50V,Electrolytic
C957,958	VCQYKA1HM473K	J	AB	0.047 µF,50V,Mylar
C965,966	VCQYKA1HM473K	J	AB	0.047 µF,50V,Mylar
C967	VCEAZA1EW477M	J	AD	470 µF,25V,Electrolytic
C971	VCEAZA1HW335M	J	AB	3.3 µF,50V,Electrolytic
C980	VCKYCY1HB103K	J	AA	0.01 µF,50V
C981	RC-KZ007LAWZZ	J	AD	0.0022 µF,250V
C983~985	RC-KZ007LAWZZ	J	AD	0.0022 µF,250V
CA100,101	RC-EZ0047AWZZ	J	AC	10 µF,50V,Electrolytic
CA102,103	RC-EZ0007AWZZ	J	AF	10 µF,10V,Electrolytic
CA104,105	VCKYCY1HB102K	J	AA	0.001 µF,50V
CA110	VCCCCY1HH101J	J	AA	100 pF (CH),50V
CA114~117	VCKYCY1HB102K	J	AA	0.001 µF,50V
CA123,124	VCCCCY1HH180J	J	AA	18 pF (CH),50V
CA130	VCKYCY1HB102K	J	AA	0.001 µF,50V
CA131	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA132	VCEAZA1EW476M	J	AB	47 µF,25V,Electrolytic
CA133~135	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA137	VCKYCY1HB102K	J	AA	0.001 µF,50V
CA138	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA141~144	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA145,146	VCKYTV1HB334K	J	AC	0.33 µF,50V
CA149,150	VCEAZA1CW107M	J	AC	100 µF,16V,Electrolytic
CA151,152	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA153,154	VCEAZA1CW107M	J	AC	100 µF,16V,Electrolytic
CA155,156	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA159,160	VCKYTV1HB334K	J	AC	0.33 µF,50V
CA165,166	RC-KZ0007AWZZ	J	AG	1 µF,25V,Electrolytic
CA175	RC-KZ0007AWZZ	J	AG	1 µF,25V,Electrolytic
CA178	RC-KZ0007AWZZ	J	AG	1 µF,25V,Electrolytic
CA179~182	VCFYFA1HA155J	J	AF	1.5 µF,50V,Thin Film
CA183~186	VCKYCY1HB103K	J	AA	0.01 µF,50V
CA187,188	VCFYFA1HA224J	J	AC	0.22 µF,50V,Thin Film
CA192,193	VCKYCY1HB102K	J	AA	0.001 µF,50V
CA194	VCEAZA1HW107M	J	AC	100 µF,50V,Electrolytic
CA196,197	VCFYFA1HA224J	J	AC	0.22 µF,50V,Thin Film
CA199	VCEAZA1EW476M	J	AB	47 µF,25V,Electrolytic
CA401~403	VCKYCY1HB102K	J	AA	0.001 µF,50V
CA404,405	VCKYCY1EB104K	J	AD	0.1 µF,25V
CA406	VCEAZA1EW476M	J	AB	47 µF,25V,Electrolytic
CA407	VCEAZA1HW105M	J	AB	1 µF,50V,Electrolytic
CA408	VCKYCY1EB103K	J	AA	0.01 µF,25V
CA409	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA410	VCEAZA1EW476M	J	AB	47 µF,25V,Electrolytic
CA411	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA412	VCEAZA1EW476M	J	AB	47 µF,25V,Electrolytic
CA413	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA416	VCKYCY1EF104Z	J	AA	0.1 µF,25V
CA417~420	VCCCCY1HH181J	J	AA	180 pF (CH),50V

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CS01	VCKYCY1HB472K	J	AA	0.0047 µF,50V
CS02	VCEAZA1HW475M	J	AB	4.7 µF,50V,Electrolytic
CS03	VCEAZA1HW106M	J	AB	10 µF,50V,Electrolytic
CS05	VCKYBT1HB102K	J	AA	0.001 µF,50V
CS06	VCQYKA1HM223K	J	AB	0.022 µF,50V,Mylar
CS12	VCKYCY1EF223Z	J	AB	0.022 µF,25V

RESISTORS

	VRS-CY1JB000J	J	AA	0 ohm,Jumper,0.8×1.55mm,Green
R1,2	VRD-ST2CD822J	J	AA	8.2 kohms,1/6W
R3	VRD-ST2CD223J	J	AA	22 kohms,1/6W
R4,5	VRD-ST2CD822J	J	AA	8.2 kohms,1/6W
R6	VRD-ST2CD223J	J	AA	22 kohms,1/6W
R7	VRD-ST2CD470J	J	AA	47 ohms,1/6W
R8	VRS-CY1JB273J	J	AA	27 kohms,1/16W
R9	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R10	VRS-CY1JB331J	J	AA	330 ohms,1/16W
R11	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R12	VRS-CY1JB272J	J	AA	2.7 kohms,1/16W
R13	VRD-ST2CD123J	J	AA	12 kohms,1/6W
R14	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R15	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R16	VRD-ST2CD392J	J	AA	3.9 kohms,1/6W
R17	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R24	VRS-CY1JB221J	J	AA	220 ohms,1/16W
R25~31	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R32	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
R33,34	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R35	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R36,37	VRS-CY1JB681J	J	AA	680 ohms,1/16W
R38	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R39	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R40	VRD-ST2CD100J	J	AA	10 ohm,1/6W
R51	VRS-CY1JB220J	J	AA	22 ohms,1/16W
R52	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R53	VRD-ST2EE470J	J	AA	47 ohms,1/4W
R55	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R56	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R57	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R58	VRS-CY1JB1R0J	J	AA	1 ohm,1/16W
R59	VRS-CY1JB123J	J	AA	12 kohms,1/16W
R60	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R61	VRS-CY1JB392J	J	AA	3.9 kohms,1/16W
R62	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R63	VRD-ST2EE101J	J	AA	100 ohm,1/4W
R64	VRS-CY1JB392J	J	AA	3.9 kohms,1/16W
R72	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R73	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
R82	VRS-CY1JB393J	J	AA	39 kohms,1/16W
R83	VRS-CY1JB470J	J	AA	47 ohms,1/16W
R84	VRS-CY1JB4R7J	J	AA	4.7 ohms,1/16W
R101	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R102	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R103~105	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R106	VRD-ST2CD101J	J	AA	100 ohm,1/6W
R107,108	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R109	VRD-ST2CD101J	J	AA	100 ohm,1/6W
R111,112	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
R114,115	VRD-ST2CD222J	J	AA	2.2 kohms,1/6W
R400	VRD-ST2EE331J	J	AA	330 ohms,1/4W
R402	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W
R403	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R405	VRD-ST2EE181J	J	AA	180 ohms,1/4W
R406	VRD-RT2HD152J	J	AA	1.5 kohms,1/2W
R407	VRD-RT2HD102J	J	AA	1 kohm,1/2W
R408,409	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R411,412	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R421	VRD-ST2EE4R7J	J	AA	4.7 ohms,1/4W
R422	VRS-CY1JB561J	J	AA	560 ohms,1/16W
R423	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R424	VRS-CY1JB124J	J	AA	120 kohms,1/16W
R425	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R426	VRS-CY1JB333J	J	AA	33 kohms,1/16W
R427	VRD-ST2CD221J	J	AA	220 ohms,1/6W
R428	VRD-ST2CD152J	J	AA	1.5 kohms,1/6W
R429,430	VRD-ST2CD103J	J	AA	10 kohm,1/6W
R431	VRD-ST2CD104J	J	AA	100 kohm,1/6W
R432	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R433,434	VRD-RT2HD181J	J	AA	180 ohms,1/2W
R438	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R501,502	VRS-CY1JB102J	J	AA	1 kohm,1/16W

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
R503	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R511,512	VRD-ST2CD122J	J	AA	1.2 kohms,1/6W (Serial No. 30300001~30400519) [For U.S.A.]
R511,512	VRD-ST2CD122J	J	AA	1.2 kohms,1/6W (Serial No. 30400001~30400050) [For Canada]
R511,512	VRD-ST2CD821J	J	AA	820 ohms,1/6W (Serial No. 30600520~) [For U.S.A.]
R511,512	VRD-ST2CD821J	J	AA	820 ohms,1/6W (Serial No. 30600051~) [For Canada]
R513,514	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
R515~520	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R521	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R522,523	VRS-CY1JB271J	J	AA	270 ohms,1/16W
R524	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R525,526	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W (Serial No. 30300001~30400519) [For U.S.A.]
R525,526	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W (Serial No. 30400001~30400050) [For Canada]
R525,526	VRS-CY1JB182J	J	AA	1.8 kohms,1/16W (Serial No. 30600520~) [For U.S.A.]
R525,526	VRS-CY1JB182J	J	AA	1.8 kohms,1/16W (Serial No. 30600051~) [For Canada]
R527,528	VRD-ST2CD472J	J	AA	4.7 kohms,1/6W
R535	VRD-ST2CD122J	J	AA	1.2 kohms,1/6W
R536	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W
R537,538	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R539	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R540	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R541,542	VRS-CY1JB102J	J	AA	1 kohm,1/16W (Serial No. 30300001~30400519) [For U.S.A.]
R541,542	VRS-CY1JB102J	J	AA	1 kohm,1/16W (Serial No. 30400001~30400050) [For Canada]
R541,542	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W (Serial No. 30600520~) [For U.S.A.]
R541,542	VRS-CY1JB122J	J	AA	1.2 kohms,1/16W (Serial No. 30600051~) [For Canada]
R543,544	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R545,546	VRS-CY1JB183J	J	AA	18 kohms,1/16W
R547,548	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R549,550	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R551,552	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R555	VRD-ST2EE221J	J	AA	220 ohms,1/4W
R556	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R557	VRD-ST2EE221J	J	AA	220 ohms,1/4W
R558	VRD-ST2EE470J	J	AA	47 ohms,1/4W
R559	VRD-RT2HD152J	J	AA	1.5 kohms,1/2W
R560	VRD-RT2HD102J	J	AA	1 kohm,1/2W
R569,570	VRD-ST2EE470J	J	AA	47 ohms,1/4W
R571	VRD-ST2CD472J	J	AA	4.7 kohms,1/6W
R572	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R573	VRD-ST2CD103J	J	AA	10 kohm,1/6W
R574	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R575,576	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R577,578	VRS-CY1JB392J	J	AA	3.9 kohms,1/16W
R579,580	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R601,602	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R603	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R606	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R607	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R608,609	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R610,611	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R612~615	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R616	VRS-CY1JB182J	J	AA	1.8 kohms,1/16W
R618,619	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R620	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R623	VRS-CY1JB821J	J	AA	820 ohms,1/16W
R627,628	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R630,631	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R632	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
R633,634	VRS-CY1JB271J	J	AA	270 ohms,1/16W

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R635	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R636	VRS-CY1JB271J	J	AA	270 ohms,1/16W
R637	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R638	VRS-CY1JB681J	J	AA	680 ohms,1/16W
R639	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R641~644	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R645	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R646,647	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R648,649	VRS-CY1JB270J	J	AA	27 ohms,1/16W
R651,652	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R659	VRD-ST2CD180J	J	AA	18 ohms,1/6W
R670	VRD-ST2CD220J	J	AA	22 ohms,1/6W
R671	VRD-ST2CD103J	J	AA	10 kohm,1/6W
R673	VRD-ST2CD104J	J	AA	100 kohm,1/6W
R681	VRD-ST2CD154J	J	AA	150 kohms,1/6W
R682	VRS-CY1JB153J	J	AA	15 kohms,1/16W
R695,696	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R699,700	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R709,710	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R714	VRD-ST2CD103J	J	AA	10 kohm,1/6W
R716	VRD-ST2CD152J	J	AA	1.5 kohms,1/6W
R717	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R718	VRD-ST2CD272J	J	AA	2.7 kohms,1/6W
R719	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R720	VRS-CY1JB182J	J	AA	1.8 kohms,1/16W
R721	VRD-ST2CD122J	J	AA	1.2 kohms,1/6W
R723	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R724	VRD-ST2CD122J	J	AA	1.2 kohms,1/6W
R725	VRS-CY1JB152J	J	AA	1.5 kohms,1/16W
R728	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R729	VRD-ST2CD151J	J	AA	150 ohms,1/6W
R730	VRS-CY1JB151J	J	AA	150 ohms,1/16W
R731	VRD-ST2CD224J	J	AA	220 kohms,1/6W
R733,734	VRD-ST2CD103J	J	AA	10 kohm,1/6W
R738	VRS-CY1JB182J	J	AA	1.8 kohms,1/16W
R739	VRD-ST2CD472J	J	AA	4.7 kohms,1/6W
R741	VRD-ST2CD104J	J	AA	100 kohm,1/6W
R742	VRD-ST2CD271J	J	AA	270 ohms,1/6W
R743	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R761,762	VRS-CY1JB151J	J	AA	150 ohms,1/16W
R770	VRS-CY1JB152J	J	AA	1.5 kohms,1/16W
R771	VRS-CY1JB272J	J	AA	2.7 kohms,1/16W
R772	VRS-CY1JB103J	J	AA	10 kohm,1/16W
R774	VRD-ST2CD102J	J	AA	1 kohm,1/6W
R775	VRD-ST2CD474J	J	AA	470 kohms,1/6W
R776	VRD-ST2CD823J	J	AA	82 kohms,1/6W
R777	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
R778,779	VRD-ST2CD472J	J	AA	4.7 kohms,1/6W
R783	VRS-CY1JB473J	J	AA	47 kohms,1/16W
R785	VRS-CY1JB103J	J	AA	10 kohm,1/16W
⚠ R901	VRD-RT2HD394J	J	AB	390 kohms,1/2W
⚠ R902	VRD-ST2CD224J	J	AA	220 kohms,1/6W
⚠ R903	VRD-RT2HD475J	J	AA	4.7 Mohms,1/2W
⚠ R904~906	VRD-RT2HD473J	J		47 kohms,1/2W
⚠ R907	VRS-VV3DAR15J	J	AB	0.15 ohms,2W
⚠ R908	VRS-VV3DAR18J	J		0.18 ohms,2W
⚠ R909	VRS-VV3DAR10J	J	AB	0.1 ohm,2W
⚠ R910	VRD-RT2HD100J	J	AA	10 ohm,1/2W
⚠ R914	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
⚠ R915	VRS-CY1JB154J	J	AA	150 kohms,1/16W
⚠ R916	VRD-ST2CD152J	J	AA	1.5 kohms,1/6W
⚠ R917	VRS-VV3DA473J	J	AB	47 kohms,2W
⚠ R918	VRD-ST2CD221J	J	AA	220 ohms,1/6W
⚠ R920	RR-HZ0001AWZZ	J	AE	4.7 Mohms,1/2W
R930	VRD-ST2EE272J	J	AA	2.7 kohms,1/4W
R931	VRD-ST2EE392J	J	AA	3.9 kohms,1/4W
R932	VRD-ST2CD563J	J	AA	56 kohms,1/6W
R933	VRS-CY1JB471J	J	AA	470 ohms,1/16W
R962	VRD-ST2EE100J	J	AA	10 ohm,1/4W
R963	VRD-ST2EE472J	J	AA	4.7 kohms,1/4W
R964	VRS-CY1JB101J	J	AA	100 ohm,1/16W
R970	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R971	VRD-ST2EE681J	J	AA	680 ohms,1/4W
R973	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
R974	VRS-CY1JB104J	J	AA	100 kohm,1/16W
R975	VRD-ST2CD103J	J	AA	10 kohm,1/6W
R980	VRS-CY1JB102J	J	AA	1 kohm,1/16W
R983	VRD-ST2EE472J	J	AA	4.7 kohms,1/4W
⚠ R984	VRD-RT2HD473J	J		47 kohms,1/2W
R985	VRS-CY1JB223J	J	AA	22 kohms,1/16W
RA100,101	VRS-CY1JB332J	J	AA	3.3 kohms,1/16W
RA102,103	VRS-CY1JB822J	J	AA	8.2 kohms,1/16W

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
RA104~107	VRS-CY1JB124D	J	AA	120 kohms,1/16W
RA108,109	VRS-CY1JB203D	J	AB	20 kohms,1/16W
RA122,123	VRS-CY1JB102J	J	AA	1 kohm,1/16W
RA126,127	VRS-CY1JB102J	J	AA	1 kohm,1/16W
RA130,131	VRS-CY1JB153D	J	AA	15 kohms,1/16W
RA132,133	VRS-CY1JB332D	J	AA	3.3 kohms,1/16W
RA134,135	VRS-CY1JB681D	J	AA	680 ohms,1/16W
RA136,137	VRS-CY1JB102D	J	AA	1 kohm,1/16W
RA138,139	VRS-CY1JB153D	J	AA	15 kohms,1/16W
RA140,141	VRS-CY1JB332D	J	AA	3.3 kohms,1/16W
RA142,143	VRS-CY1JB681D	J	AA	680 ohms,1/16W
RA144,145	VRS-CY1JB102D	J	AA	1 kohm,1/16W
RA146~149	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
RA150,151	VRN-CM05N470J	J	AE	47 ohms,5W,Metal Film
RA152,153	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
RA155~158	VRS-CY1JB753D	J	AA	75 kohms,1/16W
RA159	VRS-CY1JB102J	J	AA	1 kohm,1/16W
RA170,171	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
RA172~175	VRS-CY1JB153D	J	AA	15 kohms,1/16W
RA400	VRS-CY1JB102J	J	AA	1 kohm,1/16W
RA403	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
RA406	VRS-CY1JB102J	J	AA	1 kohm,1/16W
RA409	VRS-CY1JB391J	J	AA	390 ohms,1/16W
RA412	VRS-CY1JB391J	J	AA	390 ohms,1/16W
RA415,416	VRS-VV3DAR10J	J	AB	0.1 ohm,2W
RA421,422	VRS-CY1JB334J	J	AA	330 kohms,1/16W
RA424	VRS-CY1JB223J	J	AA	22 kohms,1/16W
RA425	VRS-CY1JB563J	J	AA	56 kohms,1/16W
RA426	VRS-CY1JB683J	J	AA	68 kohms,1/16W
RA427	VRS-CY1JB223J	J	AA	22 kohms,1/16W
RA428	VRS-CY1JB683J	J	AA	68 kohms,1/16W
RA429	VRS-CY1JB272J	J	AA	2.7 kohms,1/16W
RA430	VRS-CY1JB104J	J	AA	100 kohm,1/16W
RA431	VRS-CY1JB123J	J	AA	12 kohms,1/16W
RA432	VRS-CY1JB682J	J	AA	6.8 kohms,1/16W
RA433	VRS-CY1JB103J	J	AA	10 kohm,1/16W
RA434	VRS-CY1JB333J	J	AA	33 kohms,1/16W
RA435	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
RA436	VRS-CY1JB222J	J	AA	2.2 kohms,1/16W
RA437	VRS-CY1JB562J	J	AA	5.6 kohms,1/16W
RA438	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
RA475	VRS-CY1JB103J	J	AA	10 kohm,1/16W
RA476	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
RA477	VRS-CY1JB473J	J	AA	47 kohms,1/16W
RA478	VRS-CY1JB102J	J	AA	1 kohm,1/16W
RA479	VRS-CY1JB473J	J	AA	47 kohms,1/16W
RA480	VRS-CY1JB103J	J	AA	10 kohm,1/16W
RA481	VRS-CY1JB473J	J	AA	47 kohms,1/16W
RS01	VRD-ST2CD472J	J	AA	4.7 kohms,1/6W
RS03	VRD-ST2CD472J	J	AA	4.7 kohms,1/6W
RS04,05	VRD-ST2CD105J	J	AA	1 Mohm,1/6W
RS06	VRD-ST2CD472J	J	AA	4.7 kohms,1/6W
RS07	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
RS10~13	RR-WZ0003AWZZ	J	AD	0.1 ohm,3W
RS14,15	VRS-CY1JB472J	J	AA	4.7 kohms,1/16W
RS16~19	VRS-CY1JB102J	J	AA	1 kohm,1/16W
RS20	VRS-CY1JB473J	J	AA	47 kohms,1/16W
RS21,22	VRS-CY1JB223J	J	AA	22 kohms,1/16W

OTHER CIRCUITRY PARTS

BI502/CNS502	QCNWN2628AWZZ	J	AF	Connector Ass'y,7/6Pin
BI511/CNS511	QCNWN2543AWZZ	J	AF	Connector Ass'y,8/7Pin
BI601/CNS601	QCNWN2547AWZZ	J	AG	Connector Ass'y,12/11Pin
BI602/CNS602	QCNWN2549AWZZ	J	AF	Connector Ass'y,6/5Pin
BI771/CNS771	QCNWN2548AWZZ	J	AD	Connector Ass'y,2/2Pin
BI900/CNSA100	QCNWN2546AWZZ	J	AE	Connector Ass'y,4/4Pin
BI932/CNS932	QCNWN2553AWZZ	J	AG	Connector Ass'y,11/10Pin
BIA103/CNSA103	QCNWN2544AWZZ	J	AH	Connector Ass'y,5/4Pin
BIA104/CNSA104	QCNWN2545AWZZ	J	AH	Connector Ass'y,6/5Pin
BIS01/CNS513	QCNWN2627AWZZ	J	AK	Connector Ass'y,4/4Pin
CNA100	92LCONE4P53254	J	AC	Plug,4Pin
CNA101	92LCONE7P53254	J	AB	Plug,7Pin
CNP1	92LCONE7P53253	J	AC	Plug,7Pin
CNP2	92LCONE8P53253	J	AC	Plug,8Pin
CNP4	92LCONE6P53253	J	AC	Plug,6Pin
CNP4A	92LCONE6P53254	J	AC	Plug,6Pin
CNP5	QCNCM705BAFZZ	J	AA	Plug,2Pin
CNP401	QCNCM705BAFZZ	J	AA	Plug,2Pin
CNP501	QCNCWZG34AWZZ	J	AE	Socket,34Pin
CNP502	QCNCWZX11AWZZ	J	AC	Socket,11Pin
CNP513	QCNCM050DAWZZ	J	AC	Plug,4Pin

NO.	PARTS CODE	★	PRICE RANK	DESCRIPTION
CNP532	92LCONEAP53253	J	AC	Plug,10Pin
CNP601	QCNCWZF34AWZZ	J	AE	Socket,34Pin
CNP602	92LCONE5P53254	J	AB	Plug,5Pin
CNP603	QCNCW060HAWZZ	J	AE	Plug,8Pin
CNP771	92LCONE2P53253	J	AB	Plug,2Pin
⚠ CNP901	QCNCM049BAWZZ	J	AC	Plug,2Pin
CNP931	92LCONEBP53253	J	AC	Plug,11Pin
CNP934	QCNCM050EAWZZ	J	AD	Plug,5Pin
CNPS01	92LCONE6P53253	J	AC	Plug,6Pin
CNPS02	QCNCM050DAWZZ	J	AC	Plug,4Pin
CNS1A/B	QCNWN2539AWZZ	J	AF	Connector Ass'y,7/7Pin
CNS2A/B	QCNWN2540AWZZ	J	AG	Connector Ass'y,8/8Pin
CNS4A/B	QCNWN2541AWZZ	J	AF	Connector Ass'y,6/6Pin
CNS5	QCNWN2542AWZZ	J	AC	Connector Ass'y,2Pin
CNS401	QCNWN2552AWZZ	J	AC	Connector Ass'y,2Pin
⚠ F901	QFS-D602DAWNI	J	AC	Fuse,6A/125V
FFC501	QCNWN2550AWZZ	J	AF	Flat Cable,34Pin
FFC502	QCNWN2551AWZZ	J	AD	Flat Cable,11Pin
FL601	VVK09SS40T+-1	J	AX	FL Display
JHP601	QJAKM0004AWZZ	J	AK	Jack,Headphones
JT501	QSOCJ0229AWZZ	J	AD	Jack,AUX Input
LUG501	QLUGP0001AWZZ	J	AC	Lug
LUG901~905	QLUGP0001AWZZ	J	AC	Lug
M1(202-6)	RMOTV0043AWZZ	J	AN	CD Door Motor
M401	RMOTV0027AWZZ	J	AM	Motor,Air Cooling Fan
M801	92LMTR1854BASY	J	AP	Motor with Gear [Sled]
M802	92LMTR4734CASY	J	BA	Motor with Chassis [Spindle]
⚠ PC901,902	RH-FX0008GEZZ	J	AE	Photo-Coupler
RL421	RRLYD0014AWZZ	J	AK	Relay
RM601	VHLGP1UM271-1	J	AH	Remote Sensor,GP1UM271
SO421	QTANA0424AWZZ	J	AE	Terminal,Speaker
SW4	QSW-F9001AW01	J	AD	Switch,Push Type [Pickup In]
SW601	92LSWICHT1663T	J	AC	Switch,Key Type [Volume Down]
SW602	92LSWICHT1663T	J	AC	Switch,Key Type [Volume Up]
SW604	92LSWICHT1663T	J	AC	Switch,Key Type [Skip/Tuning Up]
SW606	92LSWICHT1663T	J	AC	Switch,Key Type [Aux]
SW607	92LSWICHT1663T	J	AC	Switch,Key Type [Tuner (Band)]
SW608	92LSWICHT1663T	J	AC	Switch,Key Type [Stop]
SW609	92LSWICHT1663T	J	AC	Switch,Key Type [On/Stand-by]
SW610	92LSWICHT1663T	J	AC	Switch,Key Type [Open/Close]
SW611	92LSWICHT1663T	J	AC	Switch,Key Type [Bass/Treble]
SW612	92LSWICHT1663T	J	AC	Switch,Key Type [Skip/Tuning Down]
SW615	92LSWICHT1663T	J	AC	Switch,Key Type [Play/Pause]
SW771	QSW-B0004AWZZ	J	AF	Switch,Lever Type [CD Door Open/Close]
TUN1	RTUNS0029AWZZ	J	BE	Tuner Unit
⚠ VA901	VHVTN10V271-1	J	AE	Varistor,10V271K (Serial No. 30300001~30400519) [For U.S.A.]
⚠ VA901	VHVTN10V271-1	J	AE	Varistor,10V271K (Serial No. 30400001~30400050) [For Canada]
⚠ VA901	VHVTN10V471-1	J	AE	Varistor,10V471K (Serial No. 30600520~) [For U.S.A.]
⚠ VA901	VHVTN10V471-1	J	AE	Varistor,10V471K (Serial No. 30600051~) [For Canada]

CD MECHANISM PARTS

301	NGERH0011AWZZ	J	AC	Gear,Middle
302	NGERH0012AWZZ	J	AC	Gear,Drive
303	MLEVP0010AWZZ	J	AC	Rail,Guide
304	NSFTM0020AWFW	J	AD	Shaft,Guide
⚠ 306	92LHPC1LXASY	J	BD	Pickup Unit Ass'y
306- 1	————		—	Pickup Unit (Not Replacement Item)
306- 2	NGERR0043AFZZ	J	AC	Gear,Rack
306- 3	MSPRC0961AFZZ	J	AA	Spring,Rack
701	XBSSD26P06000	J	AA	Screw,ø2.6×6mm
702	XHBSD20P05000	J	AA	Screw,ø2×5mm
703	XBBSD20P03000	J	AA	Screw,ø2×3mm
704	LX-WZ1070AFZZ	J	AA	Washer,ø1.5×ø3.8×0.25mm
M801	92LMTR1854BASY	J	AP	Motor with Gear [Sled]
M802	92LMTR4734CASY	J	BA	Motor with Chassis [Spindle]
SW4	QSW-F9001AW01	J	AD	Switch,Push Type [Pickup In]

CABINET PARTS

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
201	92LCAB5115ASY1	J		Front Panel Ass'y
201- 1	————		—	Front Panel (Not Replacement Item)
201- 2	GDORF0121AWSA	J	AL	CD Door
201- 3	HDECQ0995AWSA	J	AL	Decoration Panel,CD Door
201- 4	HDECQ1046AWSA	J		Panel,CD
201- 5	HDECQ0997AWSA	J	AN	Panel,FL Display
201- 6	JKNBZ0945AWSA	J	AK	Button,Volume
201- 7	JKNBZ0946AWSA	J	AG	Button,Operation
201- 8	LHLDM5001AWSA	J	AE	Stabilizer
201- 9	PMAGF0004AWZZ	J	AF	Magnet
201-10	LPLTM0011AWFW	J	AC	Plate,York
201-11	PFLT-0074AWZZ	J	AC	Felt,CD Door
201-12	PCUSG0061AWZZ	J	AB	Cushion,CD Lid
201-13	HBDGB1001AWSA	J	AD	Badge,SHARP
201-14	HDECQ0832AWSA	J	AD	Cover,1-Bit Amp. Indicator
201-15	PSHEP0136AWZZ	J	AC	Sheet,Diffusion
201-16	PSHEG0004AWZZ	J	AB	Sheet,Stabilizer
202	DUNTZ5113AW01	J	AT	CD Door Gear Unit Ass'y
202- 1	LHLDZ1393AWZZ	J	AF	Gear Box,A
202- 2	LHLDZ1394AWZZ	J	AF	Gear Box,B
202- 3	NGERH0132AWZZ	J	AD	Gear,Drive,A
202- 4	NGERW0027AWZZ	J	AC	Gear,Worm,B
202- 5	NGERW0029AWZZ	J	AE	Gear,Worm Wheel,B
202- 6(M1)	RMOTV0043AWZZ	J	AN	CD Door Motor
202- 7	NGERH0163AWZZ	J	AE	Gear,Drive,B
203	GCABB1326AWSA	J	AS	Rear Cabinet [For U.S.A.]
203	GCABB1338AWSA	J		Rear Cabinet [For Canada]
204	GDORS0001AWSA	J	AE	Cover,Rear Cabinet,Left
205	GDORS0002AWSA	J	AE	Cover,Rear Cabinet,Right
206	HDECQ1000AWSA	J	AG	Panel,Edge Light
207	LANGK0210AWFW	J	AB	Bracket,Headphones Support
208	LANGK0354AWFW	J	AC	Bracket,Switch
209	LANGK0378AWFW	J	AF	Bracket,Fan Support
210	LANGK0387AWFW	J	AD	Bracket,PWB Support
211	LANGK0404AWFW	J	AD	Bracket,Protect Circuit PWB
212	LANGQ0016AWFW	J	AF	Bracket,Earth,Left
213	LANGQ0017AWFW	J	AE	Bracket,Earth,Right
214	LBSHC0005AWZZ	J	AD	Bushing,AC Power Supply Cord
215	LCHSA0005AWFW	J	AF	Chassis,1-Bit Amp.
216	LCHSM0181AWFW	J	AM	Chassis,Main
217	LHLDZ1325AW00	J	AC	Holder,Edge
218	LHLDZ1397AWZZ	J	AD	Holder,Delta LED
219	LHLDZ9015AWZZ	J	AK	Frame Support
220	LHLDZ9016AWZZ	J	AF	Holder,Edge Light
221	MSPRD0108AWFJ	J	AC	Spring,Fan Motor
222	NBRGC0003AWZZ	J	AC	Bearing Metal
223	NFANP0003AWSA	J	AD	Rotary Fan
224	PCOVP1007AWSA	J	AE	Cover,CD Mechanism
225	PCOVQ1017AWSA	J	AE	Cover,Jack,Right
226	PCOVQ1018AWSA	J	AE	Cover,Jack,Left
227	PCUSG0008AWZZ	J	AB	Cushion,Fan Support
228	PCUSG0022AWZZ	J	AB	Cushion,Leg
229	PCUSG0095AWZZ	J	AD	Cushion,CD Mechanism
230	PRDAR0103AWFW	J	AE	Heat Sink
231	PRDAR0281AWFW	J	AE	Heat Sink,Main,A
232	PRDAR0282AWFW	J	AH	Heat Sink,Main,B
233	PRDAR0283AWFW	J	AF	Heat Sink
234	PRDAR0285AWFW	J	AM	Heat Sink,1-Bit Amp.
235	PSHEP0133AWSA	J	AF	Sheet,Edge Light
236	PSLDM3115AWFW	J	AH	Shield Case,1-Bit Amp.
⚠ 237	QACCD0032AWZZ	J	AL	AC Power Supply Cord with CNS901
⚠ 239	QFSHD0001AWZZ	J	AB	Holder,Fuse
240	RCORF0018AWZZ	J	AG	Core
241	RCORF0024AWZZ	J	AD	Core
244	TSPC-1243AWZZ	J	AD	Label,Specifications [For U.S.A.]
244	TSPC-1244AWZZ	J		Label,Specifications [For Canada]
245	92LCSPR1431C	J	AA	Spring,Ring
246	92LNBAND1318A	J	AA	Nylon Band,80mm
601	LX-BZ0073AWFD	J	AB	Screw,Special
602	LX-BZ0880AFZZ	J	AC	Screw,ø2×2.2mm
603	LX-EZ0005AWFD	J	AA	Screw,ø2.6×10mm
604	LX-JZ0010AFFD	J	AA	Screw,ø3×10mm
605	LX-JZ0022AFFD	J	AA	Screw,ø3×10mm
606	LX-JZ0036AWFD	J	AB	Screw,Special
607	LX-JZ0045AWFD	J	AB	Screw,ø3×10mm
608	XBPSD30P06KS0	J	AA	Screw,ø3×6mm
609	XEBSD26P08000	J	AA	Screw,ø2.6×8mm
610	XEBSD26P10000	J	AA	Screw,ø2.6×10mm
611	XEBSD30P10000	J	AA	Screw,ø3×10mm
612	XEBSD30P12000	J	AA	Screw,ø3×12mm
613	XHBSD26P06000	J	AA	Screw,ø2.6×6mm
614	XJBSD30P06000	J	AA	Screw,ø3×6mm
615	XJBSD30P08000	J	AA	Screw,ø3×8mm
616	XJBSF30P08000	J	AA	Screw,ø3×8mm
617	XJBSF30P10000	J	AA	Screw,ø3×10mm
618	XWHSD32-08170	J	AA	Washer,ø3.2×ø17×0.8mm
619	XHBSD30P06000	J	AA	Screw,ø3×6mm

PACKING PARTS (Except for U.S.A.)

	SPAKA0427AWZZ	J	AF	Packing Add.,Left
	SPAKA0428AWZZ	J	AF	Packing Add.,Right
	SPAKC1608AWZZ	J		Packing Case
	SPAKZ1022AWZZ	J	AF	Pad,Accessories
	SPAKZ1023AWZZ	J	AE	Pad,Center
	SPAKZ1080AWZZ	J	AF	Spacer,CD Door
	SSAKA0007AWZZ	J	AB	Polyethylene Bag,Accessories
	SSAKH0122AWZZ	J	AE	Polyethylene Bag
	SSAKH0123AWZZ	J	AE	Polyethylene Bag
	SSAKH0139AWZZ	J	AB	Polyethylene Bag,CD Door

ACCESSORIES

	QANTL0014AWZZ	J	AP	AM Loop Antenna
	TCAUH0093AWZZ	J		Sheet,Speaker Connection
	TGANE0014AWZZ	J	AD	Resistraion Card [For U.S.A. Only]
	TINSE0523AWZZ	J	AE	Operation Manual [For U.S.A.]
	TINSK0153AWZZ	J	AG	Operation Manual [For Canada]
	TINSZ0905AWZZ	J	AC	Quick Guide [For U.S.A. Only]
	TLABM0183AWZZ	J	AD	Label,Feature
	TLABZ0593AWZZ	J	AB	Label,Energy Star (Set)
	92LFANT1535A	J	AF	FM Antenna
	RRMCG0375AWSA	J	AR	Remote Control
	GFTAB1051AWSA	J		Battery Lid,Remote Control

P.W.B. ASSEMBLY (Not Replacement Item)

⚠ PWB-A1~3	92LPWB5115MANS	J	—	Main/Power/Protect Circuit (Combined Ass'y)
PWB-B1~3	92LPWB5113DPLS	J	—	Display/Headphones/Switch (Combined Ass'y)
PWB-C	92LPWB5113AMPS	J	—	1-Bit
PWB-D	QPWBF0027AWZZ	J	AD	CD Motor (PWB Only)

OTHER SERVICE PART

	UDSKA0004AFZZ	J	AZ	CD Pickup Lens Cleaner

CP-EX200

SPEAKER BOX PARTS

901	GBOXS6012AWSA	J	BC	Speaker Box Ass'y
902	CPNLS1086AW01	J	AY	Front Panel Ass'y
903	CWAKP1081AW01	J	AV	Net Frame Ass'y
904	HDECQ1002AWSA	J	AX	Decoration Panel,Tweeter
905	PFLT-0046AWZZ	J	AC	Felt
906	TSPC-1321AWZZ	J		Label,Specifications
907	QCNWN2537AWZZ	J		Lead Wire Ass'y (with Capacitor C1,2)
908	PDUC-0026AWSA	J		Duct Pipe
909	PKYU-0010AWZZ	J	AH	Absorber,Rear
910	QTANA9010AWZZ	J	AG	Terminal,Speaker
911	PCUSG0147AWZZ	J	AG	Leg,Cushion
912	LHLDZ8002AWZZ	J		Catching Holder
913	XEBSD26P08000	J	AA	Screw,ø2.6×8mm
914	XJBSD30P10000	J	AA	Screw,ø3×10mm
915	XMBSD40P16000	J	AC	Screw,ø4×16mm
916	XMPSD40P16000	J		Screw,ø4×16mm
917	PCUSS0070AWZZ	J		Cushion,Port Tube
918	PKYU-0013AWZZ	J		Absorber,Bottom
919	PCUSS0069AWZZ	J		Cushion,Tweeter Decoration Panel

NO.	PART CODE	★	PRICE RANK	DESCRIPTION
SP1,2	RSPA10102AW4W	J	BE	Woofer
SP3,4	RSPA00088AW4T	J	AY	Tweeter

PACKING PARTS (Except for U.S.A.)

	SPAKA0425AWZZ	J	AG	Packing Add.,Top/Bottom
	SPAKZ1020AWZZ	J		C-Pad,Center
	SPAKZ1021AWZZ	J		Sheet,Miramat
	SSAKH0121AWZZ	J	AF	Polyethylene Bag,Speaker
	SSAKK0001AWZZ	J	AB	Polyethylene Bag,Speaker Cord

ACCESSORIES

	QCNWH0011AWZZ	J		Speaker Cord
	TLABZ1375AWZZ	J	AB	Label,Model

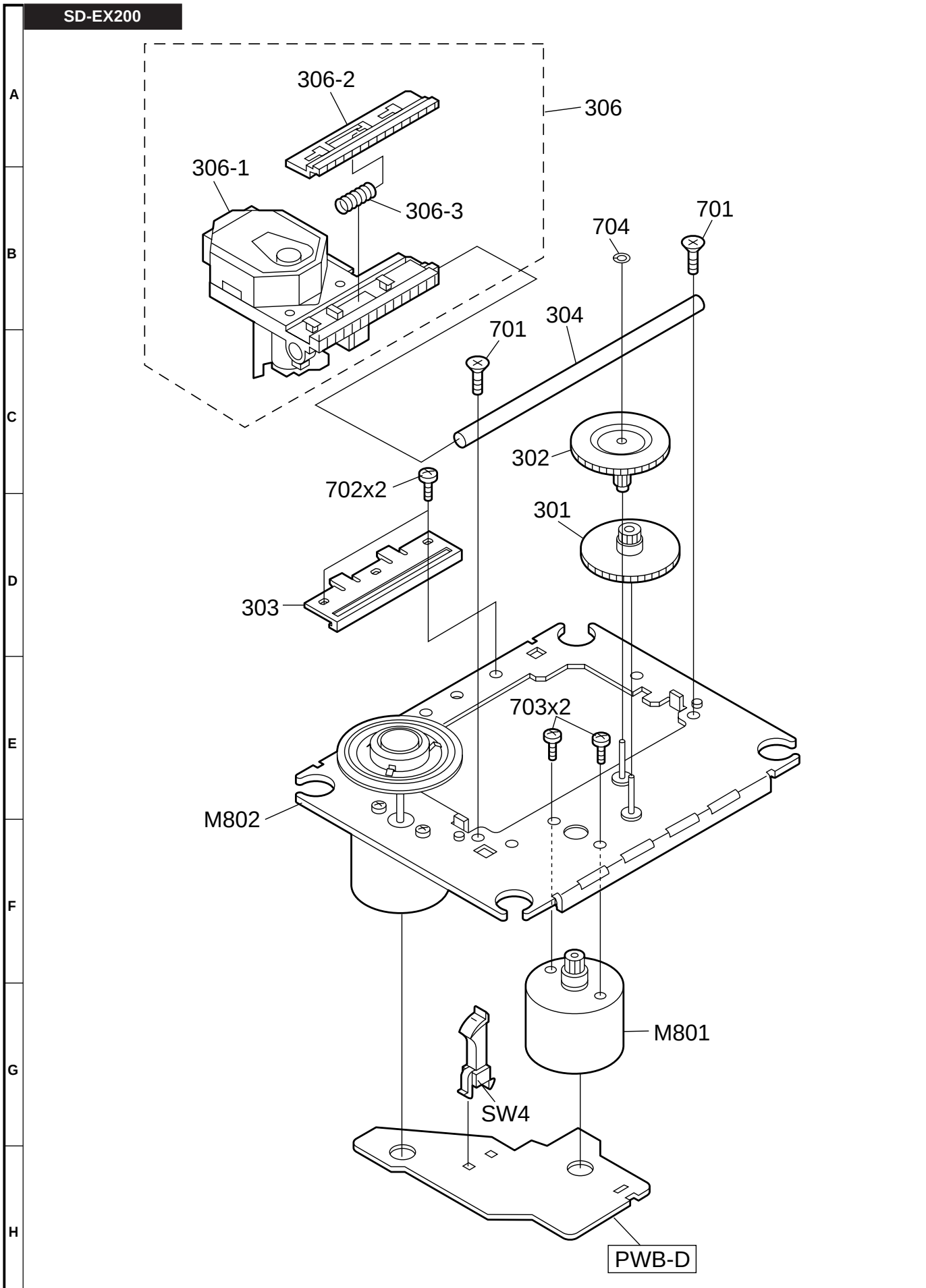


Figure 8 CD MECHANISM EXPLODED VIEW

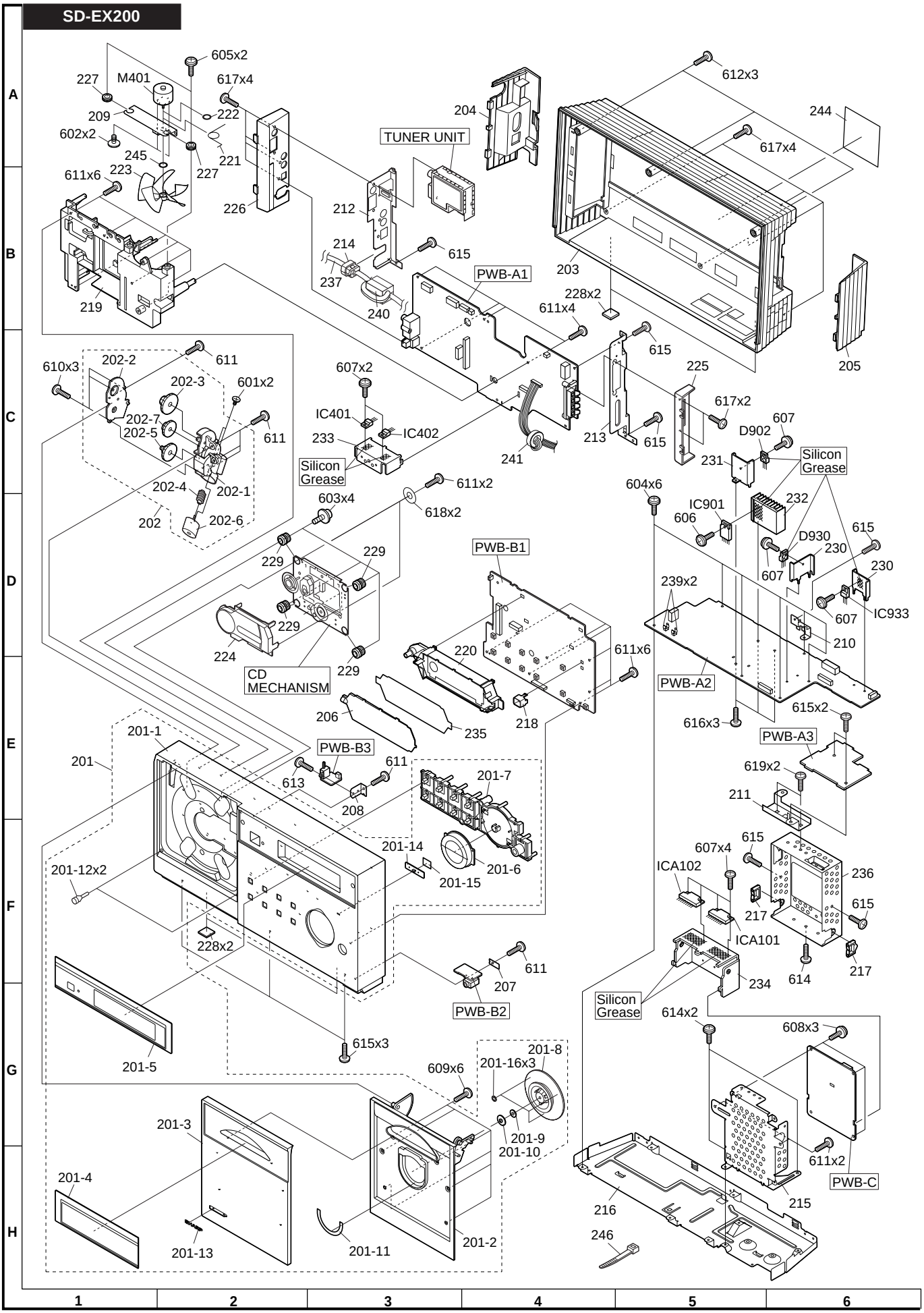


Figure 9 CABINET EXPLODED VIEW

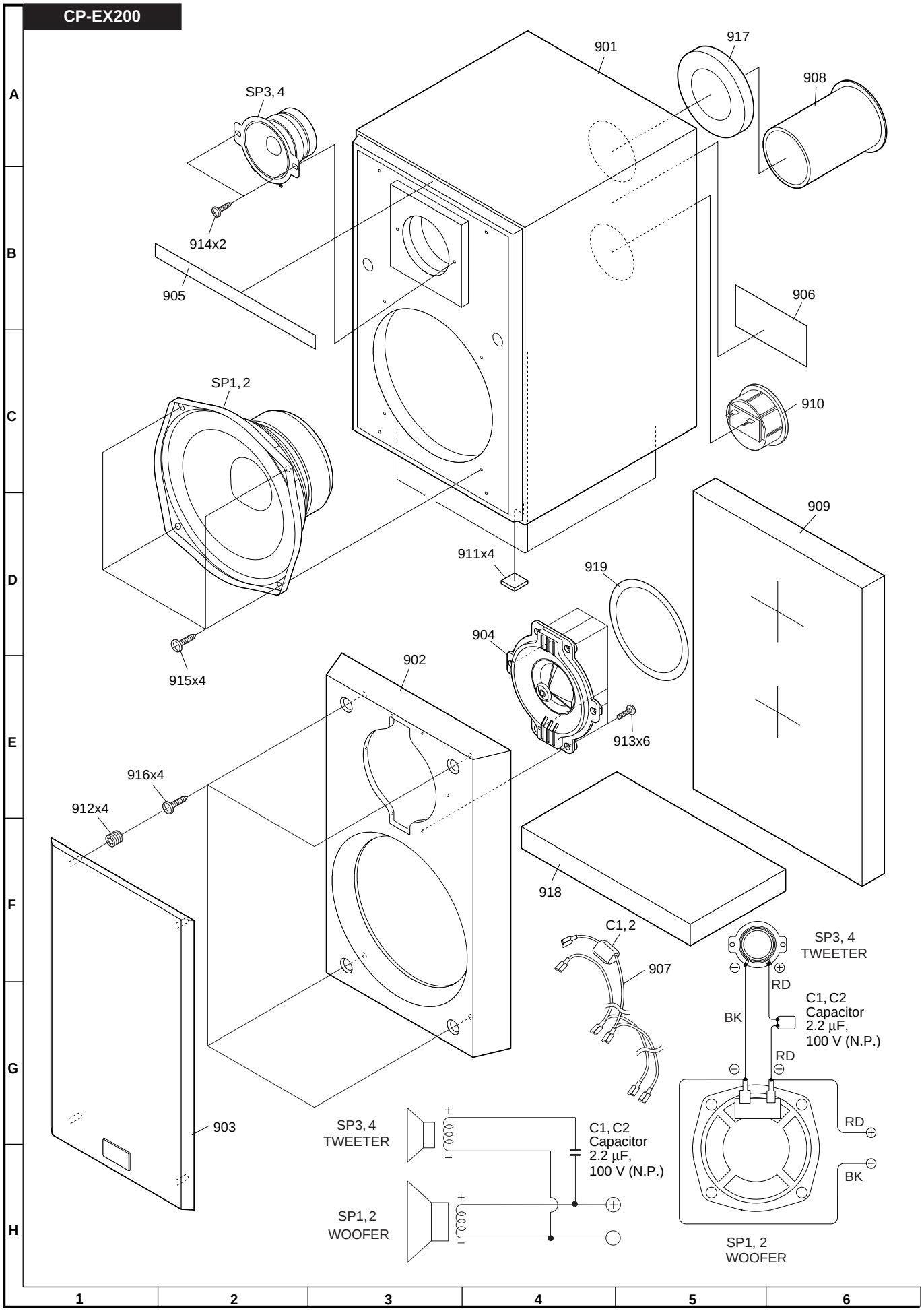
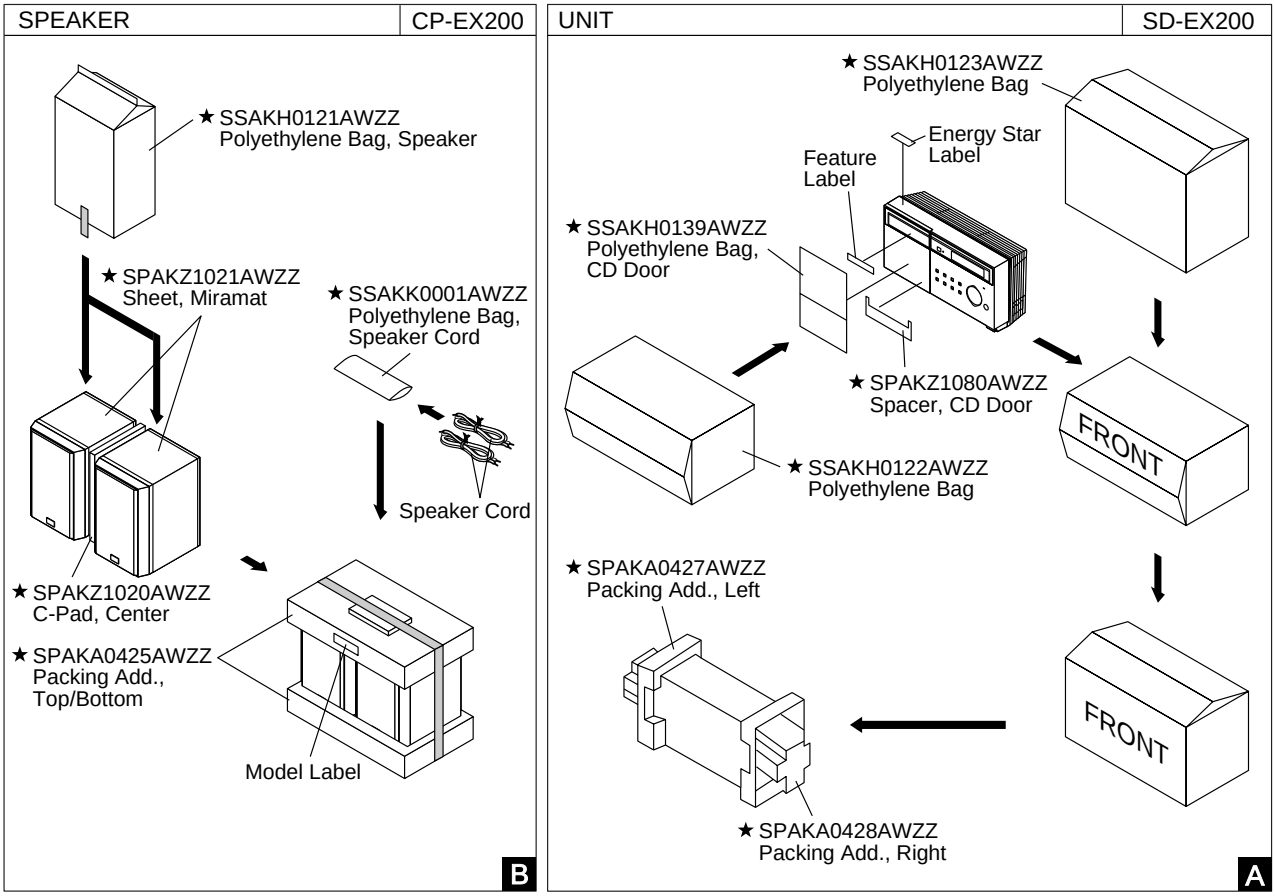
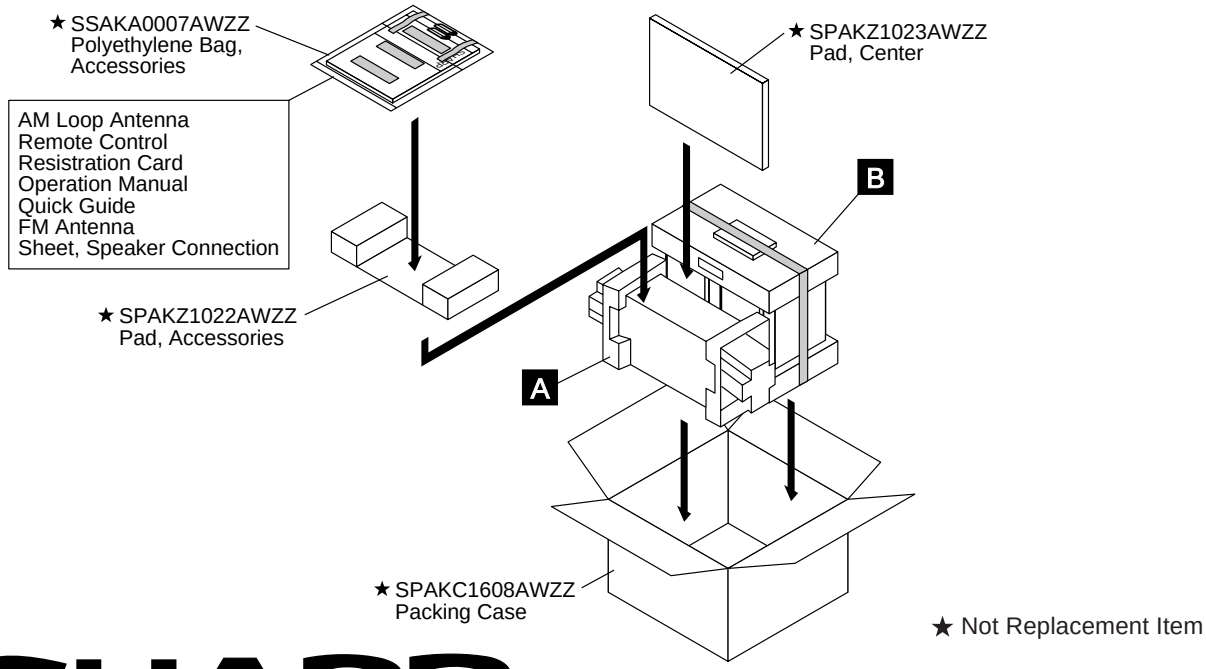


Figure 10 SPEAKER EXPLODED VIEW

PACKING OF THE SET (FOR U.S.A. ONLY)





★ Not Replacement Item

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